MINUTE ITEM
This Calendar Item No. 54
was approved as Minute Item
No. 54 by the State Lands
Commission by a vote of 3
to 0 at its 8/3/94
meeting.

CALENDAR ITEM

54

A 35

S 18

08/03/94 PRC 1824
W 40654 PRC 3150
Johnson
Gonzalez
Walker

ADOPT MITIGATED NEGATIVE DECLARATION AND APPROVE THE ABANDONMENT AND REMOVAL OF FOUR OFFSHORE OIL PLATFORMS, SANTA BARBARA COUNTY

LESSEE:

Chevron U.S.A. Inc.
Attn: Mr. G. W. Gray
P. O. Box 6917
Ventura, California 93006

AREA, TYPE LAND AND LOCATION:

Oil drilling and production Platforms Hazel and Hilda, located on State oil and gas lease PRC 1824, and Platforms Hope and Heidi on State oil and gas lease PRC 3150 are located on State tide and submerged lands in the eastern portion of the Santa Barbara Channel, Santa Barbara County (Exhibit"A").

BACKGROUND:

Platform Hazel was installed in 1958 and Platform Hilda in 1960. Platforms Hope and Heidi were constructed on lease PRC 3150 in 1965. During the life of the four platforms, production totaled approximately 62.3 million barrels of crude oil and 132.8 million cubic feet of natural gas. All of the platforms were shut-in in 1992.

Chevron plans to abandon and remove Platforms Hope, Heidi, Hilda and Hazel and abandon associated oil and gas pipelines in the manner and under conditions specified in the proposed Mitigated Negative Declaration ND 652, Sch. No. 94051016 (Exhibit "B") and the list of Project Stipulations (Exhibit "C").

In summary, a contractor hired by Chevron, after conducting a seafloor survey of the site to locate subsurface debris and establish anchor and mooring sites for the project removal equipment, will dismantle the platforms in several

distinct procedures including decommissioning of the auxiliary and emergency equipment, sectioning of the platform decks for removal by a derrick barge and cutting of the pilings and conductors to allow for removal of the platform jackets. Mechanical cutting methods will be used for the legs of Platform Hazel and explosive cutting for the piles and conductors of the other three platforms.

In an associated but separate activity, pipelines between Platform Hope and the shoreline will be repositioned and left to service production from Platforms Grace and Gail in Federal waters which previously produced to Platform Hope and then onto shore. The remaining pipelines from Hazel, Heidi and Hilda will be cleaned by flushing and running a "pig" through the lines to remove all hydrocarbons, filled with grout or other inert substances, and abandoned in place. All platform materials will be taken by barge to the Port of Long Beach/Los Angeles for onshore salvage and disposal. The final step in abandonment will be a cleanup of any debris from the removal operations or debris which was located during the initial site surveys.

Chevron U.S.A., Inc. remains the State's lessee on the affected leases, PRC 1824 and PRC 3150.

STATUTORY AND OTHER REFERENCES:

A. P.R.C.: Div. 6, Parts 1 and 2; Div. 13.
B. Cal. Code Regs.: Title 3, Div. 3; Title 14, Div. 6.

AB 884:

08/11/94

OTHER PERTINENT INFORMATION:

1. Pursuant to the Commission's delegation of authority and the State CEQA Guidelines (14 Cal. Code Regs. 15025), the staff has prepared a Proposed Mitigated Negative Declaration identified as EIR ND 652, State Clearinghouse No. 94051016. The Proposed Negative Declaration was prepared and circulated for public review pursuant to the provisions of CEQA.

   During the public comment period, staff received letters from the federal Minerals Management Service (MMS), the California Coastal Commission (CCC), the Santa Barbara County Air Pollution Control District (APCD), and the Energy Division, County of Santa Barbara Resource Management

Department. The major concerns of each agency and staff's responses are summarized below. Staff's detailed responses to each comment received have been furnished to the Commission and each commentor.

Minerals Management Service
The MMS expressed its concern that the placement and use of the derrick barge for the removal of Platform Hope not adversely impact the pipelines that will be rerouted around Platform Hope and remain in place to service Platforms Grace and Gail in the federal OCS. Stipulation 3 in Exhibit "C" has been added to require the placement of the derrick barge on the west side of Platform Hope, i.e., the side opposite the pipelines.

California Coastal Commission
The CCC's comments focused primarily on the issue of abandonment of facilities, both pipelines and platform components, in place versus their removal. Of primary concern was any potential interference with commercial fishing activities that might be restored to the area subsequent to the removal of the platforms. The CCC also suggested that the observers that are proposed, among other purposes, to ensure that no marine mammals are present within a defined zone of potential impact during the use of explosives in the removal procedures be "independent" of Chevron or its contractors.

Staff provided the CCC additional information regarding the considerations that were used to elect to abandon certain facilities and remove others. In addition, Stipulations 2 (independent observers), 4 (test trawls at each former platform location), 5 (underwater surveys of abandoned facilities) and 6 (removal of abandoned facilities at the Commission's discretion) in Exhibit "C" are proposed in further response to the CCC's concerns.

Santa Barbara County Air Pollution Control District
The APCD recommended in their letter of May 24, 1994, that an environmental impact report (EIR) be prepared in deference to the proposed Mitigated Negative Declaration (MND). The District also indicated that the proposed ...abandonment and removal of the platforms constitute a construction activity" for which air emission offsets would be required if pollutant levels were above stated levels.

In a subsequent letter of May 27, 1994, the District indicated that a mitigated negative declaration was appropriate and listed measures that would reduce the identified emission levels. In its response to the District, staff indicated that such measures were specified in the Commission's environmental documentation. On further review, staff determined, on the basis of the information contained in the proposed MND and the District's rules governing "construction" activities, that the regulated emissions associated with the project are below the threshold above which offsets would be necessary.

However, in a letter of July 20, 1994, the District reiterated its position that offsets were required in addition to the measures specified in their letter of May 27. Staff sought additional clarification from the District and were advised that the District now regards the proposed activity as a "new source" rather than a "construction" activity as previously indicated. Under such classification, emissions are evaluated under different threshold criteria.

In sum, while the issues have been better defined and focused, the extent and requirements of Chevron's authorization from the District will require additional discussions between the parties.

Energy Division, County of Santa Barbara

As an "interested agency", the County, through the staff of the Energy Division recommended that an EIR be prepared for the project on the basis of potential air quality impacts (see preceding discussion) and potential impacts to marine resources, i.e., in conjunction with an oil spill and the use of explosives. Staff believes that sufficient information and analyses exist within the proposed MND to mitigate the impacts identified.

The County's comments also addressed issues raised by the CCC as above described. In addition to the stipulations described with respect to the CCC, Stipulation 1 is incorporated in response to the County's specific recommendations.

Based upon the Initial Study, the Proposed Mitigated Negative Declaration, and the comments received in response thereto, and the stipulations incorporated therein, there is

no substantial evidence that the project will have a significant effect on the environment. (14 Cal. Code Regs. 15074(b))

A copy of the environmental document is attached as Exhibit "B".

2. This activity involves lands identified as possessing significant environmental values pursuant to P.R.C. 6370 et seq. Based upon the staff's consultation with the Department of Fish and Game and through the CEQA process, it is the staff's opinion that the project, as proposed, is consistent with the use classification.

EXHIBITS:

A. Location Map
B. Negative Declaration
C. Stipulations
D. Mitigation Monitoring Plan

IT IS RECOMMENDED THAT THE COMMISSION:

1. CERTIFY THAT A PROPOSED NEGATIVE DECLARATION, ND 652, STATE CLEARINGHOUSE NO. 94051016, WAS PREPARED FOR THIS PROJECT PURSUANT TO THE PROVISIONS OF THE CEQA AND THAT THE COMMISSION HAS REVIEWED AND CONSIDERED THE INFORMATION CONTAINED THEREIN AND THE COMMENTS RECEIVED IN RESPONSE THERETO.

2. ADOPT THE MITIGATED NEGATIVE DECLARATION AND DETERMINE THAT THE PROJECT, AS APPROVED, WILL NOT HAVE A SIGNIFICANT EFFECT ON THE ENVIRONMENT.

3. ADOPT THE STIPULATIONS TO THE PROJECT AS CONTAINED IN EXHIBIT "C", ATTACHED HERETO.

4. ADOPT THE MITIGATION MONITORING PLAN, AS CONTAINED IN EXHIBIT "D" ATTACHED HERETO.

5. FIND THAT THIS ACTIVITY IS CONSISTENT WITH THE USE CLASSIFICATION DESIGNATED FOR THE LAND PURSUANT TO P.R.C. 6370 ET. SEQ.

6. APPROVE, IN THE MANNER DESCRIBED IN THE DOCUMENTATION CONTAINED IN EXHIBITS "B" AND "C", THE REMOVAL, WITH STIPULATIONS, OF PLATFORMS HAZEL, HILDA, HOPE AND HEIDI FROM STATE OIL AND GAS LEASES PRC 1824 AND 3150 TOGETHER WITH THE ABANDONMENT OF THE ASSOCIATED OIL AND GAS PIPELINES WITH DISPOSAL OF THE PLATFORM STRUCTURE MATERIAL AT THE ONSHORE SITE AS DETAILED IN THE ATTACHED EXHIBIT "B".

7. AUTHORIZE STAFF TO TAKE ALL ACTIONS NECESSARY TO IMPLEMENT THIS PROJECT CONSISTENT WITH: 1) THE COMMISSION'S RULES AND REGULATIONS; 2) SOUND ENGINEERING PRACTICES; AND 3) MAXIMUM FEASIBLE PROTECTION OF THE ENVIRONMENT.

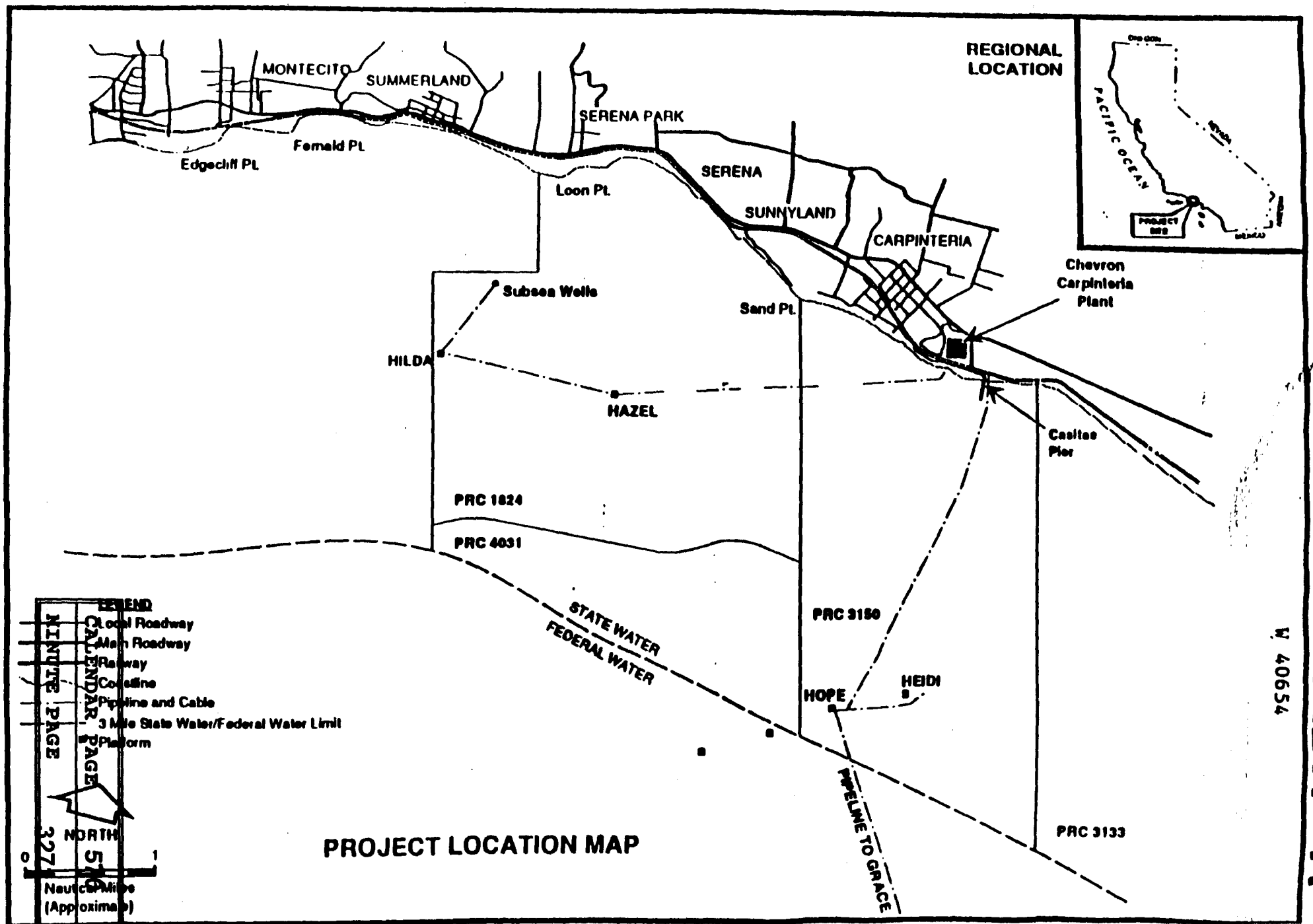

FIGURE 1.2-1

EXHIBIT A

STATE OF CALIFORNIA

PETE WILSON, Gov

STATE LANDS COMMISSION

LEO T. McCARTHY, *Lieutenant Governor*
GRAY DAVIS, *Controller*
THOMAS W. HAYES, *Director of Finance*

EXECUTIVE OFFICE
1807 - 13th Street
Sacramento, CA 95

CHARLES WAL
Executive Officer

EXHIBIT B

May 9, 1994
File: W 40654
ND 652
SCH No. 94051016

NOTICE OF PUBLIC REVIEW OF A PROPOSED NEGATIVE DECLARATION

(SECTION 15073 CCR)

A Negative Declaration has been prepared pursuant to the requirements of the California Environmental Quality Act (Section 21000 et seq., Public Resources Code), the State CEQA guidelines (Section 15000 et seq., Title 14, California Code Regulations), and the State Lands Commission Regulations (Section 2901 et seq., Title 2, California Code Regulations) for a project currently being processed by the staff of the State Lands Commission.

This document is being circulated under a shortened review, pursuant to Public Resources Code, Section 21091(d)(2), and is attached for your review. Comments should be addressed to the State Lands Commission office shown above with attention to the undersigned. All comments must be received by May 31, 1994.

Should you have any questions or need additional information, please call the undersigned at (916) 322-0530.

Goodyear K. Walker

GOODYEAR K. WALKER
Division of Environmental
Planning & Management

Attachment

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PROPOSED NEGATIVE DECLARATION

File: W 40654
ND 652
SCH No. 94051016

Project Title:	Removal of Offshore Oil Platforms Heidi, Hilda, Hope & Hazel
Project Proponent:	Chevron U.S.A., Inc.
Project Location:	Santa Barbara Channel, offshore Santa Barbara County.
Project Description:	Four offshore oil platforms will be removed and barged to Long Beach Harbor for dismantling.
Contact Person:	Goodyear K. Walker Telephone: (916) 322-0530

This document is prepared pursuant to the requirements of the California Environmental Quality Act (Section 21000 et seq., Public Resources Code), the State CEQA Guidelines (Section 15000 et seq., Title 14, California Code Regulations), and the State Lands Commission regulations (Section 2901 et seq., Title 2, California Code Regulations).

Based upon the attached Initial Study, it has been found that:

/___/ that project will not have a significant effect on the environment.

/_X_/ mitigation measures included in the project will avoid potentially significant effects.

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CONTENTS (Continued)

CONTENTS (Continued)

CONTENTS (Continued)

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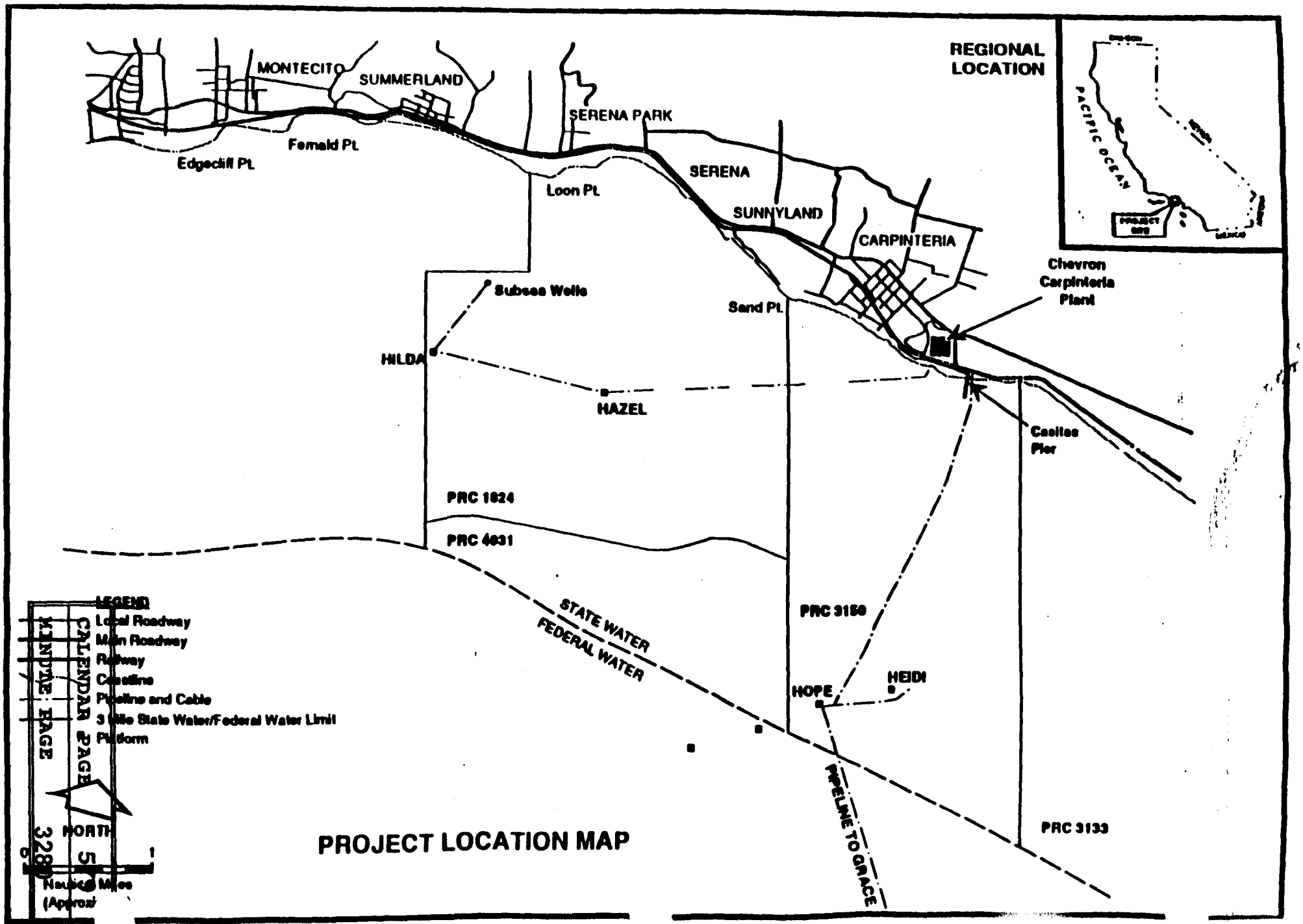

REGIONAL LOCATION
PACIFIC OCEAN
PROJECT SITE
MONTECITO
SUMMERLAND
SERENA PARK
Femald Pt
Edgecliff Pt
Loon Pt
SERENA
SUNNYLAND
CARPINTERIA
Chevron Carpinteria Plant
Subsea Wells
Sand Pt
HILDA
HAZEL
Casitas Pier
PRC 1024
PRC 4031
PRC 3150
STATE WATER
FEDERAL WATER
HOPE
HEIDI
PIPELINE TO GRACE
PRC 3133
LEGEND
Local Roadway
Main Roadway
Railway
Coastline
Pipeline and Cable
3 Mile State Water/Federal Water Limit
Platform
MINUTE PAGE
CALENDAR PAGE
NORTH
5
Miles
(Approx)
PROJECT LOCATION MAP

FIGURE 1.2-1

1.0 PROJECT OVERVIEW

1.1 PROJECT PROPONENT

Chevron U.S.A. Production Company

1.2 PROJECT LOCATION

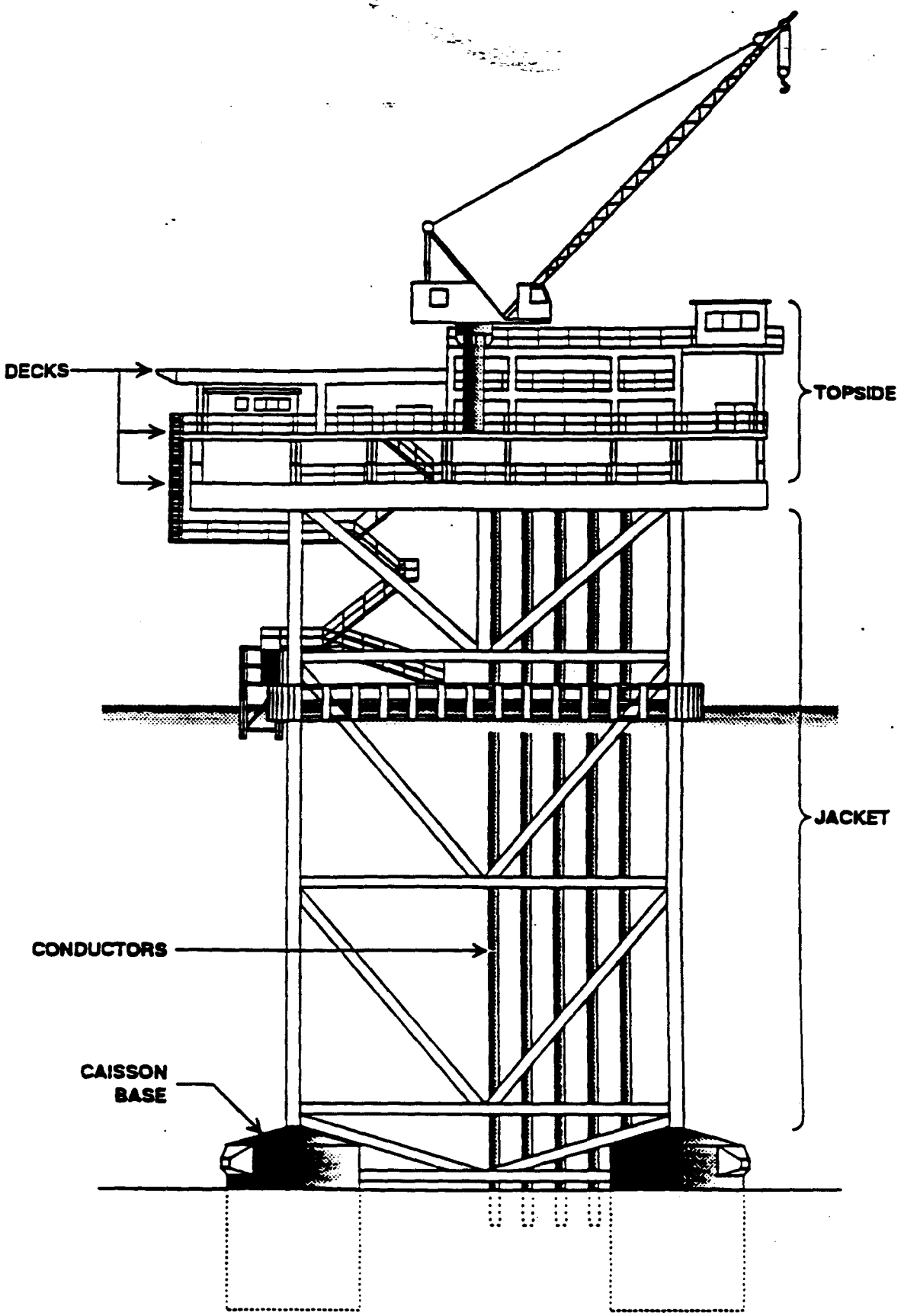
Platforms Hazel and Hilda (State Lease PRC 1824) and Platforms Hope and Heidi (State Lease PRC 3150) are located on State tidelands and submerged lands in the eastern portion of the Santa Barbara Channel, California (see Figure 1.2-1). Two of these platforms, Hope and Heidi, are within a legislative grant to Santa Barbara county, although all rights concerning oil and gas extraction were reserved to the State under the terms of the grant.

1.3 PROJECT BACKGROUND

The production of oil and gas reserves by Chevron within State Leases PRC 1824 and 3150 began in 1958 with the completion of Platform Hazel (see Figure 1.3-1). Construction of Platform Hilda was completed in 1960, Hope in 1965, and Heidi in 1965 (see Figure 1.3-2). The oil production from these offshore facilities is transported by subsea pipelines to Chevron's mainland separation, treatment, and processing facility located within the City of Carpinteria (see Figure 1.2-1). During the life of the four platforms, production has totaled approximately 62.3 million barrels of crude oil and 132.8 million cubic feet of natural gas.

All of the wells on these platforms were shut-in prior to September 1992. After the wells were shut in on each platform, the majority of the oil and gas processing equipment was drained and cleaned. Equipment left in service on the platforms includes wastewater handling facilities, air compressors, saltwater pumps, emergency power generators, navigation lights, fog horns, cathodic protection rectifiers, Platform Hope's vapor recovery compressor, and the pipelines carrying OCS oil and gas via Hope to the Carpinteria Plant. Subsea pipelines between Heidi and Hope, Hope and the Carpinteria Plant, Hilda and Hazel, and Hazel and the Carpinteria Plant have been left operational to handle rainwater and wastewater. The low pressure gas pipeline between Heidi and Hope has been left in service in order to bleed down Heidi's well casings to Hope's vapor recovery compressor.

Operations personnel conduct daily walk-throughs of each platform to ensure the proper operation of the equipment that is left in service. A remote alarm system allows personnel at the Carpinteria Plant to monitor critical alarms and functions on each platform.



PLATFORM HAZEL
PROFILE

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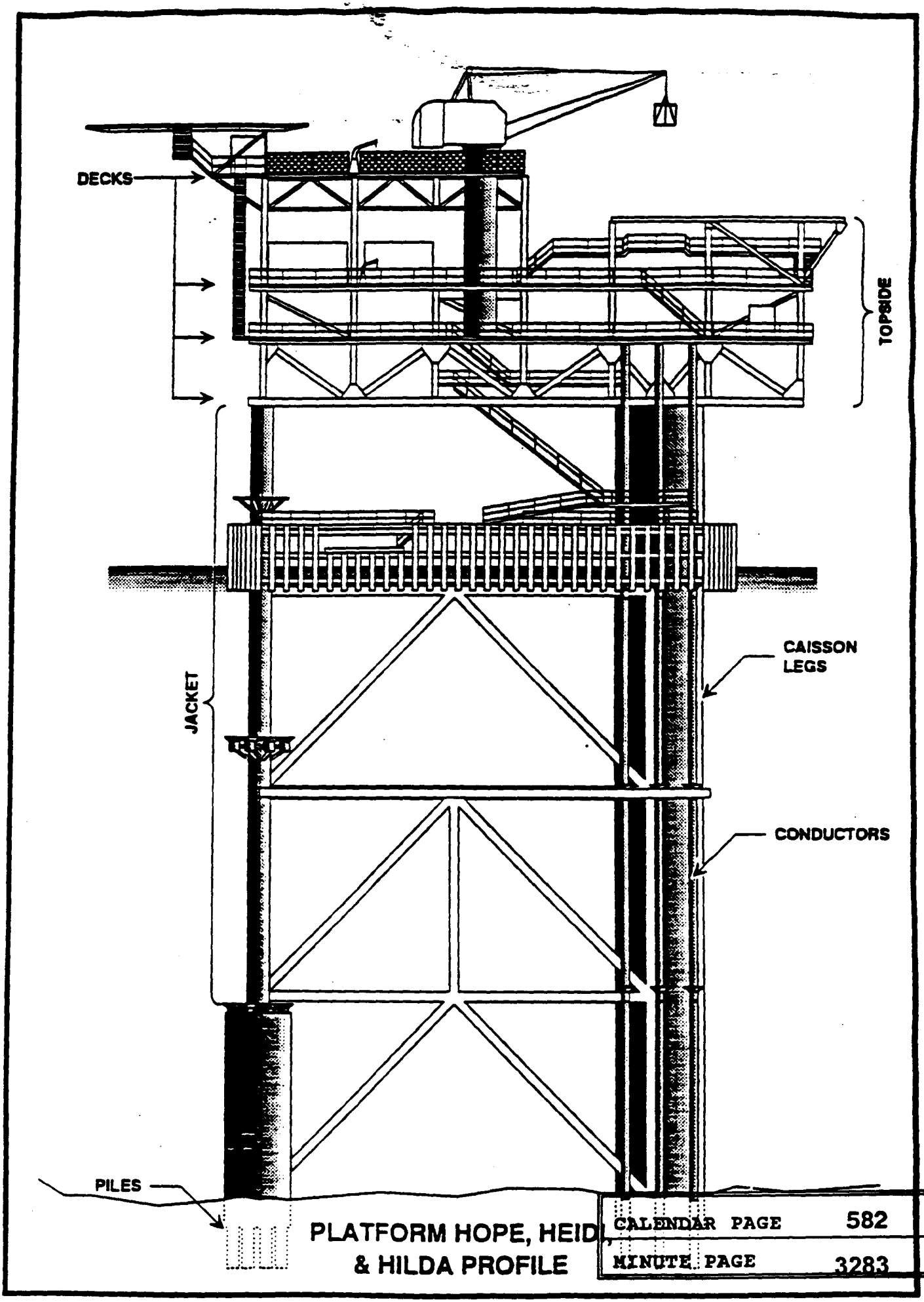
FIGURE 1.3-1



PLATFORM HOPE, HEIDRUN & HILDA PROFILE

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FIGURE 1.3-2

The wells on each platform will be abandoned using procedures and equipment that have been described in Well Plugging and Abandonment Plans submitted and approved by the State Lands Commission and the Department of Oil and Gas. The abandonment rig will be used to cut and recover well conductors located outside the platform legs on all platforms. Decommissioned piping and equipment that can be handled by the existing cranes on the platforms will be cut loose from the platform by work crews and loaded onto the crew boat that services the platforms. The equipment will be transported to Chevron's Casitas Pier where it will be offloaded and stored temporarily at the Carpinteria Plant site. Most of this equipment will be transported to an appropriate facility and scrapped. Some equipment may be reused by Chevron or sold.

1.4 PROJECT OBJECTIVES

Chevron petroleum production facilities located on State Leases PRC 1824 and 3150 can no longer be feasibly operated due to the near depletion of the petroleum resource, and economic costs associated with continuing operations. The dismantling of these facilities by Chevron is being proposed in accordance with the lease stipulations regarding the removal of facilities and restoration of the project site following the completion of oil and gas production operations.

1.5 PROJECT SUMMARY

Chevron proposes to permanently abandon and remove Platforms Hope, Heidi, Hilda, Hazel, and associated oil and gas pipelines. Such activities will result in some short-term impacts associated with removal equipment and vessel operations. Removal and abandonment procedures are further discussed below.

1.5.1 Platform Removal Procedures

Prior to initiating project abandonment operations, preliminary seafloor surveys will be conducted within a 1,000-foot radius of the platforms. The survey work will be conducted using side-scan sonar to identify the location of subsurface debris and to establish potential anchor and mooring sites for project abandonment equipment. Additionally, all sensitive bottom features, including pipelines, rocky outcrops, and kelp beds will be noted during the survey. These areas will be noted on applicable navigation charts and no anchors will be placed in the sensitive areas.

Dismantling of the project platforms will require several distinct procedures including decommissioning of auxiliary and emergency equipment, removal of the platform decks or topsides, the cutting of the platform pilings and conductors, and the disposal of the platform

jackets. Figures 1.3-1 and 1.3-2 illustrate the general location of platform pilings, jackets, and decks or topsides.

Initially, cutting torches and welding equipment will be brought to the platforms to complete the decommissioning of the platform auxiliary and emergency equipment. This phase will not require the use of support equipment until the final removal of heavy equipment is to begin. At this time, several support vessels will be brought to the project site including a derrick barge, material barges, tug boats, crew boats, and diving support vessels. The materials barges are expected to be stored on separate moorings near the platforms and tended by a tug boat. Furthermore, during this phase any residual fluids collected during the final cleaning operations will be drained into appropriate containers on a work boat and transported to shore for appropriate treatment or disposal.

Removal of the decks or topsides will include the sectioning of the platform into pieces that provide adequate structural support and are light enough to be removed by the derrick barge. The sizes and weights of decking pieces will be determined by the capacity of the derrick barge to be utilized and the configuration of deck packages. Upon the installation of structural padeyes and rigging preparations, topside deck pieces will be attached to lift slings and a crane hook aboard the derrick barge, and final cuts made to allow the pieces to be lifted aboard the vessel. The deck sections will then be transferred to the material barges and eventually transported to the Los Angeles/Long Beach Harbor to be scrapped.

The final platform removal operation includes the removal of the platforms' jackets. In general, Platforms Hope, Heidi and Hilda have similar configurations with two large caisson legs originally used to float the jackets into place. Platform Hazel, however, contains cement filled caissons bases and will require a different removal technique than that used for the other three platforms.

Before the removal of platform jackets, it will be necessary to cut the pilings that anchor the platforms, and the conductors that were not removed during platform well abandonment. The cutting of the piling and conductors will be performed from inside the caisson legs and skirt pile guides and involve the use of several pieces of specialized equipment. Cutting operations will be performed from a barge and workboats utilizing explosives on three of the platforms, and from the platform decks utilizing mechanical cutting methods on Platform Hazel.

Removal of the Hope, Heidi, and Hilda jackets will occur from the top downward to maximize safety. In addition, the bottom horizontal elevation will be left in place to maintain stability between the 54-inch caisson legs. Each lift is expected to be pulled up and stacked on

the materials barge for storage and eventual transport to the mainland. Once the final piece of jacket has been cut away and removed, all that will remain is the caisson legs, the bottom horizontal elevation, and the caisson bases. Final cuts will then be made on the caisson legs to separate them from the rest of the structure, leaving the bracing between the legs intact.

A derrick barge will then adjust position and a tug will attach a tow bridle to the caisson legs. Pumping will be commenced from a utility vessel to dewater the legs and achieve moderate positive buoyancy. Upon achieving buoyancy, the tug will initiate pulling operations to free the legs from the bottom. Additional pulling forces may be applied by winches on the derrick barge to achieve the breakout force required. The legs will be freed and pumping operations will continue from the utility vessel while the tug tows the legs to a secure location. Upon completion of pumping operations, the legs will be attached to a temporary mooring and towing preparations completed. At this time, the legs may be separated before towing by cutting the connecting bracing and conductor guides alongside the derrick barge.

The smaller caisson bases would be removed one at a time using the derrick barge crane. Once the caisson bases reach the surface, drain holes will be cut into the bases to allow the water to drain as the load is held at the surface. Once drained, the caissons bases would be placed on the materials barge for storage and transport.

Platform Hazel's jacket will be removed from the top downward to maximize safety. Each lift will be stacked on a materials barge for storage and transport. Currently, the bottom horizontal elevation of the platform is below the existing mudline, along with the grouted 27-foot-diameter caisson bases. The bottom horizontal and caisson bases will therefore be left buried in place to minimize bottom disturbance. Platform Hazel legs will be removed to 1 foot below the existing mudline. Once the cutting of the legs has occurred, the removal operations required for this platform would be similar to that described above for Platforms Hope, Heidi, and Hilda.

1.5.2 Pipeline Abandonment

Abandonment operations will include the flushing and pigging of all oil and gas pipelines. Flushing will continue until no visible hydrocarbons are observed. A seep tent shall be used if any lines can not be successfully flushed and plugged. The pipelines will be separated from the platforms, capped, and the ends jetted down below mudline. Pipeline spool pieces connecting the pipeline to the platforms risers will be recovered and blind flanges installed on each pipeline end. Some excavation may be required to expose the pipeline flanges, leaving a trench to be used for burial of the capped pipeline ends. It is expected that the disturbance to the seafloor

will be moderate and natural bottom contours are expected to be restored by current and tidal energy. Also during this period the power cables running between the platforms and shore will be cut, the ends jetted down, and covered with natural sediment.

Pipelines between Platform Hope and the shoreline will be left in service. In the past these pipelines serviced Platforms Hope and Heidi and are currently servicing Platforms Grace and Gail, located in federal waters. As proposed, Platforms Grace and Gail will continue to produce through these pipelines, which include a 10-inch oil (SACS), 12-inch oil (Gail/Grace), and 10-inch gas (Combined Streams).

The pipelines between Platform Hazel and the shoreline will be abandoned in place. These pipelines include an 8-inch out of service oil line, 6-inch gas, and 6-inch oil. The offshore ends of these pipelines will be separated from the platform, capped, and jetted below mudline as described above. The nearshore sections of these pipelines will be filled with grout from the top of the bluff to approximately 800 feet offshore.

The pipelines between platforms Heidi and Hope include a 10-inch gas lift, 10-inch gas, and 10-inch oil. These lines will be abandoned in place as described above. The pipelines between Platforms Hilda and Hazel include an 8-inch out of service oil line, 6-inch gas, and 6-inch oil. These lines will be abandoned in place as described above.

1.5.3 Seafloor Cleanup and Restoration

The final phase of the offshore abandonment project will involve the removal of debris located during the preabandonment surveys and any additional material dropped during removal of the platforms. The debris recovery will be performed over a 1,000-foot radius from the platforms with divers gathering and loading items onto a work boat. During the post-abandonment survey, all anchor scar locations will be logged and final survey maps submitted for commission review.

2.0 PROJECT DESCRIPTION

2.1 PRE-ABANDONMENT DEBRIS SURVEY

A pre-abandonment debris survey will document the quantity and location of suspected debris targets before the removal of the platform structure. This survey will also be used to identify pipelines and hard bottom areas to be avoided during work vessel anchoring operations. This survey will be performed with side scan sonar within a 1,000-foot radius of the platforms in accordance with State Lands Commission (SLC) guidelines.

2.1.1 Equipment

The survey will be performed using a 500-khz side scan sonar system such as the Klien 595 or equivalent. The survey will be conducted from a support vessel with a length of at least 50 feet. Positioning will be provided by a navigation system with 3-meter accuracy. Underwater positioning of the towfish will be based on slant range calculations.

2.1.2 Procedures

Survey lines will be run at 50-meter spacing in lines running East to West and North to South. Coverage will be interrupted by the structure, but the overlapping survey lines will complete coverage within 100 feet of the jacket on all sides. Tow speed will be between 3 and 5 knots.

2.1.3 Data Reduction

The data will be reduced to a suspected target listing showing position, size, and shape of the target.

2.1.4 Debris Recovery

Due to the potential for some small pieces of the platform topsides or jacket to fall during transfer to the materials barge, all debris will be recovered after the removal of the platform structure.

2.2 JACKET DEMOLITION PREPARATIONS

2.2.1 Equipment Spread

This work will be performed from a diving support vessel of about 165-foot Length Overall (LOA), or from a derrick barge. The vessel will be equipped with deep air surface supplied diving equipment, 10,000 psi hydroblasters, and underwater burning gear.

2.2.2 Preliminary Inspection

A remotely operated vehicle (ROV) may be used to plan the details of demolition operations and verify conditions upon which prior planning has been based. The information gathered could include debris locations on the structure, lift sling rigging locations and obstacles, and hull penetrations on caisson legs.

2.2.3 Cleaning

Divers with hydroblasting equipment will remove the marine growth from the legs and subsea bracing of each platform where cuts will be made.

2.2.4 Pre-rigging

Installation of some heavy lift slings may be performed to prepare for the first few lifts.

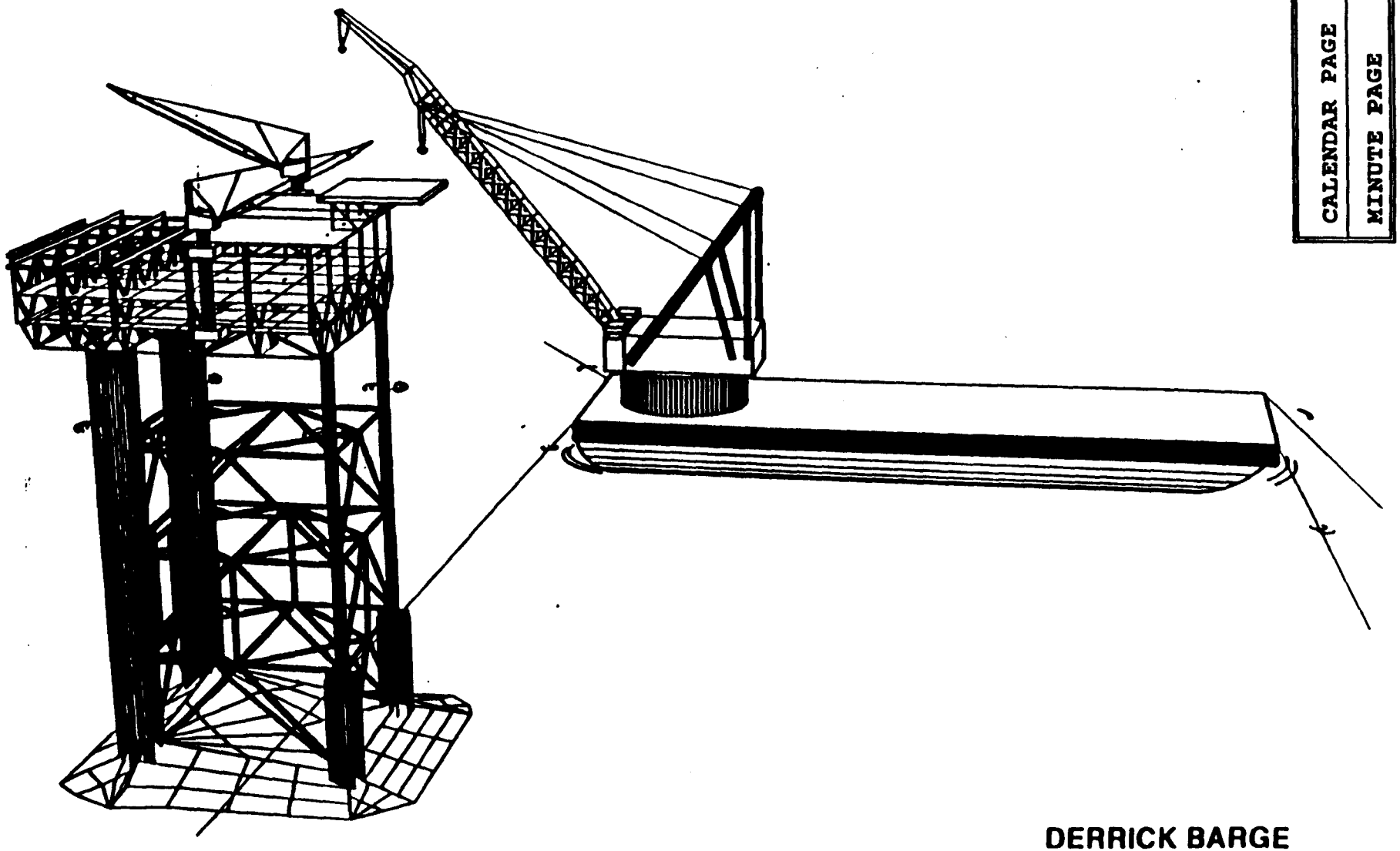
2.3 TOPSIDE REMOVAL

2.3.1 General

Prior to mobilization of the derrick barge and support vessels, a work crew with cutting torches and welding equipment will be brought to the platform. The workers will complete the decommissioning of the platform equipment.

2.3.2 Equipment

The initial stages of this work may be performed from the platform without derrick barge support. The derrick barge with a dedicated tug boat will be brought in when the first heavy lifts are ready to be performed (see Figure 2.3-1). This work may run concurrently with the jacket demolition preparations described in Section 2.5. Materials barges from 180-foot LOA to



**DERRICK BARGE
TYPICAL CONFIGURATION
(500 TON SHOWN)
PLATFORMS HOPE, HEIDI
AND HILDA**

SOURCE: International Diving Services

FIGURE 2.3-1

400-foot LOA will be utilized to receive the deck packages off-loaded. These barges may be stored on separate moorings near the structure and will always be tended by at least one tugboat in the area. Additional vessels, such as crew boats and a diving support vessel, will be used as required.

2.3.3 Cleaning of Tanks

Tanks and piping that have already been drained of operating fluids. They will be cleaned and prepared for removal. Fluids collected during the cleaning operations will be drained into appropriate containers on a work boat and transported to shore for appropriate treatment or disposal. The total volumes involved will total less than one barrel.

2.3.4 Removal of Small Items

The demolition crew will remove any small equipment items or loose material that will hinder the removal of large packages from the structure. The platform cranes or portable cranes may be used to assist in these operations.

2.3.5 Sectioning Decks

Decks will be cut into sections using oxy-acetylene torches, leaving adequate structural support until the rigging is in place for each lift.

2.3.6 Preparation of Rigging

The cutting of access holes and installation of structural padeyes for heavy lifts at specified locations will be a part of the rigging preparations. Certain lifts may be around members without the use of padeyes, as determined by the removal contractor. Heavy lift slings will be installed for the derrick barge crane.

2.3.7 Heavy Lifts

2.3.7.1 Lift Size

The size of the lifts will be determined by the capacity of the derrick barge crane used and the configuration of the deck packages. Many deck packages will be separated and removed in their original installation configuration.

2.3.7.2 Installation of Lift Rigging

The platform rigging crew will attach the lift slings to the crane hook and the crane will lift the slings to take out most of the slack.

2.3.7.3 Final Structural Cuts

The rigging crew will make final cuts to allow the package to be lifted.

2.3.7.4 Derrick Barge Position

The lifts will be made from the derrick barge, which will be anchored on a 4-point moor, positioned alongside the structure. The barge may actually make lifts while positioned on any side of the structure, depending upon its lift capacity and configuration. As described in Section 3.4, Mooring Operations, no heavy lifts will be made over the Gail/Grace pipelines while they are in service during the removal of the platforms.

2.3.7.5 Dynamic Load Preparations

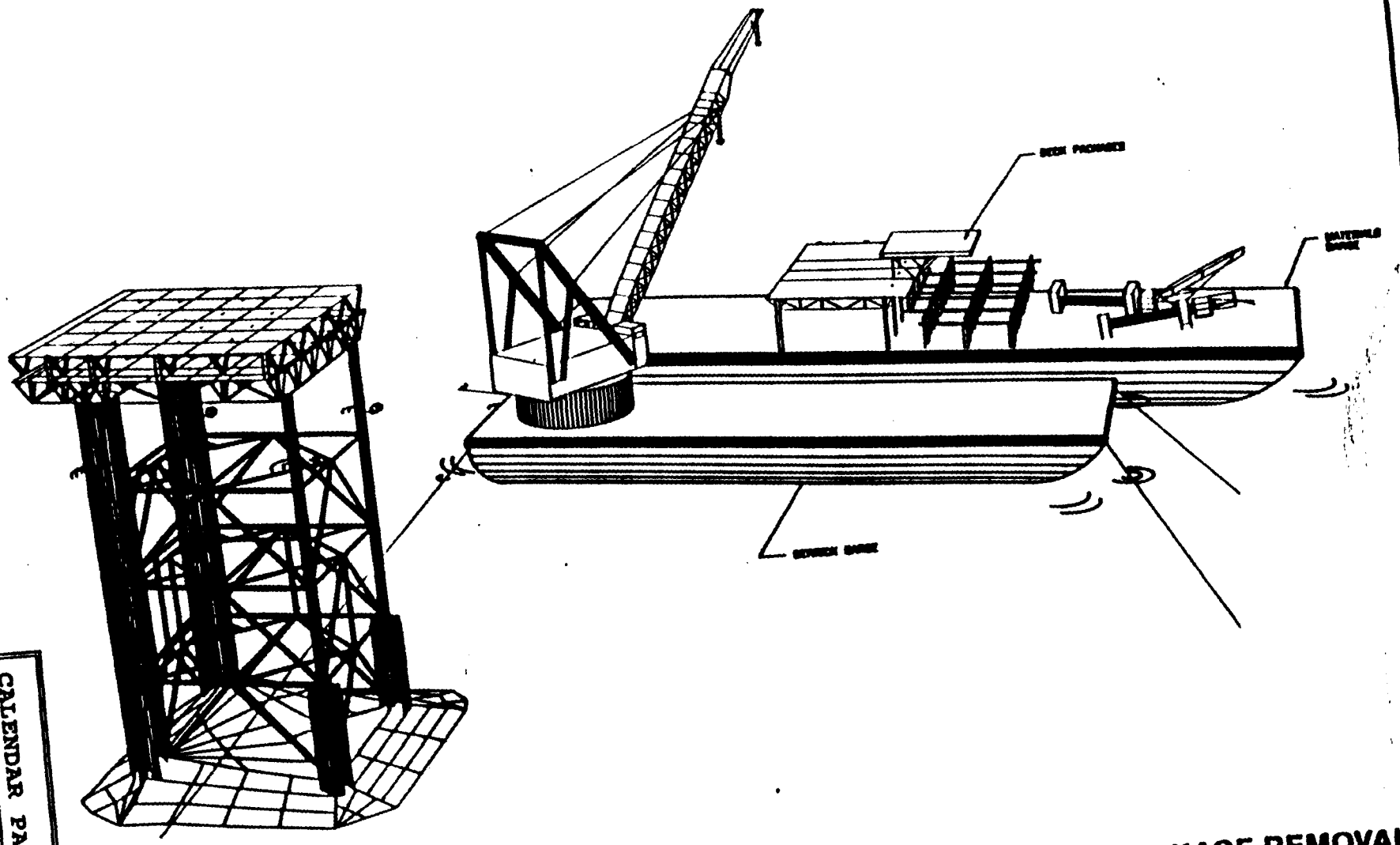
The crane lifts will be somewhat dynamic, due to the barge motion in the swell. Therefore, temporary guides will be installed where necessary to permit the load to be set back down accurately on the platform in the event a lift must be aborted.

2.3.7.6 Off-Loading on Materials Barges

A materials barge will be maneuvered with tug boats alongside the derrick barge, to receive each load. Deck packages will be stacked on the materials barge to maximize space (see Figures 2.3-1 and 2.3-2). The materials barges will be towed to the Los Angeles/Long Beach Harbor when completely loaded, and when the onshore staging area is prepared to receive them.

2.3.8 Remote Mooring

Remote moorings will be used to anchor materials barges before and after loading. These moorings will consist of a 30,000-pound anchor, 2-3/4 inch chain ground leg, dip section, and riser, with a West Coast Buoy.



DECK PACKAGE REMOVAL
PLATFORMS HOPE,
HEIDI AND HILDA

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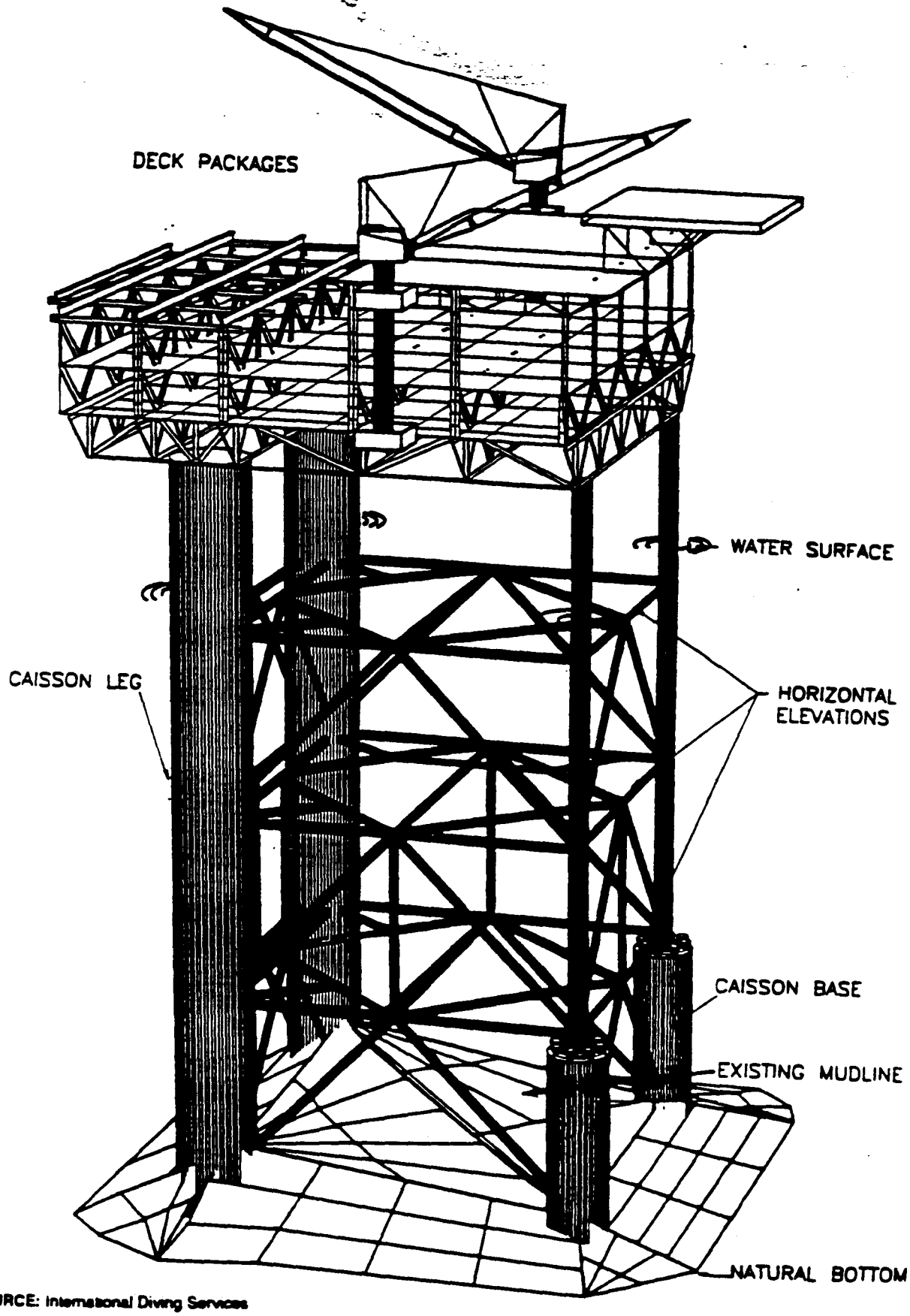
2.4 PILE AND CONDUCTOR CUTTING OPERATIONS

2.4.1 General

A similar method will be used to remove the platform piles and conductors on Platforms Hope, Heidi, and Hilda. Platform Hazel is of a different construction, and it's removal is discussed in Section 2.5.5. Before the platform jackets can be removed, it will be necessary to cut the pilings which anchor the platforms, and any well conductors that were not removed with the well abandonment rig (Figures 2.4-1 and 2.4-2). The cutting of piling and conductors inside the caisson legs and skirt pile guides will involve the use of specialized equipment and techniques. Abandonment criteria for the proposed project fall under the jurisdiction of the State Lands Commission. The California Code of Regulations, Title 14, Division 2, Chapter 4, Section 1745.8 states, "All casing and anchor piling shall be cut and removed from not more that 5 feet below the ocean floor." It should be noted that explosives will be located at least 8 feet below natural mudline. The cut points on Platform Hazel have been selected to avoid significant disturbance to the seafloor associated with removing the caisson basses.

2.4.2 Cutting Method

The use of explosives is the planned method of cutting the platform piles and conductors. The heavy lifts required to remove the jacket structures must be made with a high level of confidence that the piling and conductors anchoring the structure to the seafloor have been completely severed. Several methods were considered for the cutting tasks, including explosive charges and mechanical cutting. The use of explosives has been the dominant method of cutting piles in the Gulf of Mexico where such experience is greatest. The use of explosive charges lowered into piles has been proven as the most reliable method of making complete cuts. Since the piles and conductors will be cut beneath the platform legs and below the mudline, there will be no way to verify that complete cuts have been made in all the piles which anchor a platform leg until a derrick barge begins to lift the leg from the seafloor. If an incomplete cut is discovered at this point, there would be serious safety and logistical concerns associated with aborting the lift and redeploying the cutting equipment in the pile. For this reason, it is critical that a cutting method with a high likelihood of making a complete cut on the first attempt be employed. In the Gulf of Mexico platform removals, explosives have proven to be much more reliable in making complete cuts than mechanical cutters. The poor reliability of mechanical cutters was also noted during the removal of Texaco's Platforms Helen and Herman where the use of casing cutters resulted in problems associated with incomplete cuts. Therefore, explosives represent the most effective means of cutting the piles. The ability to verify that a complete cut has been made by mechanical cutters is difficult. Should incomplete cuts occur, there will be an increased potential for aborted lifts and their associated safety problems.

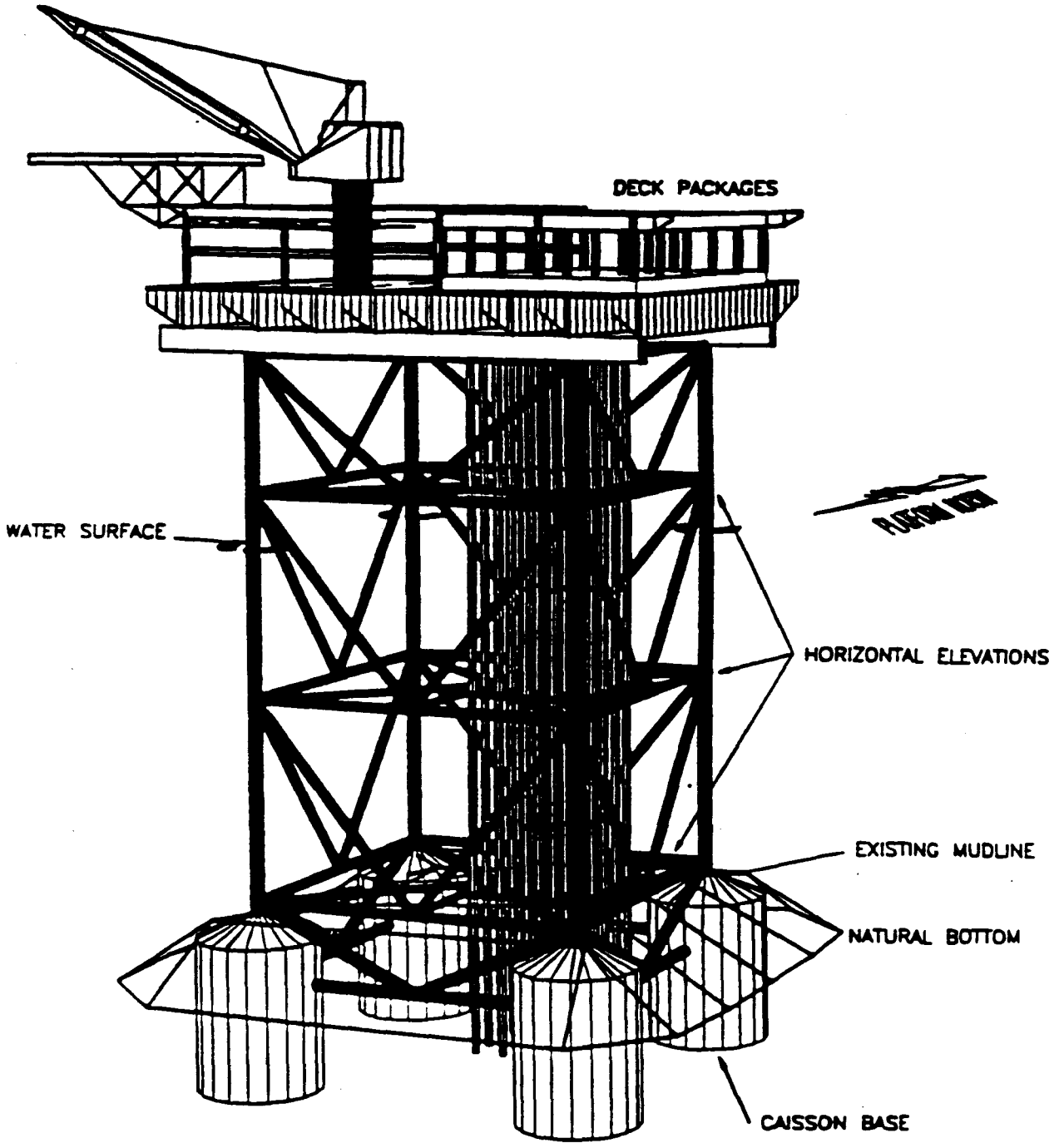


SOURCE: International Diving Services

PLATFORMS
HOPE, HEIDI, AND HILDA
ELEVATIONS

CALENDAR PAGE	594
MINUTE PAGE	3295

FIGURE 2.4-1



SOURCE: International Diving Services

PLATFORM HAZEL
ELEVATIONS

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MINUTE PAGE	3296

FIGURE 2.4-2

A key difference between explosives vs. mechanical cutting operations is the timing in which cutting operations occur. Explosive cuts will be made after the platform topsides have been removed and cutting operations can be conducted from work barges and vessels. Mechanical cutting operations require a stable base and the platform decks would be left in place to position equipment. This exposes the platform to a long time period in which the piles and conductors have been cut and topside removal operations would be completed after cutting. Mechanical cutting operations are expected to take 3 to 4 weeks per platform to complete. Once the cuts are completed, it will take 1 month to remove the platform jacket. This represents an exposure window of 2 months between the beginning of pile cutting to the end of the platform removal. Since explosive cutting would only take 3 or 4 days per platform to complete, the exposure window would only be one month. Once the pile cutting begins, the platform's ability to withstand horizontal loading is reduced. The exposed platform may shift or become damaged during extreme weather conditions or a seismic event. Such unstable conditions would significantly complicate removal operations and result in unsafe working conditions for dismantling crews. Therefore, the use of explosives is the planned method of making the conductor and pile cuts.

2.4.3 Timing of Cutting Operations

The cutting of anchor piling below the jacket legs will leave the structure free-standing. The use of explosives allows the cutting operation to be completed quickly, after the topsides have been removed, and with a shorter time period between initial cutting of piles and jacket removal.

2.4.4 Verification of Pile Internal Clearance and Jetting of Pile

2.4.4.1 Pile Internal Clearance

The piling located in the skirt pile guides has been open to the sea. Verification must be made to ensure that the inside of the pile is clear several feet below the planned cut location. Divers will be used to sound the pile using a gauge lowered on a line at the top of the pile.

2.4.4.2 Pile Jetting

If the pile is not clear, jetting may be performed to provide this clearance. Pile jetting would be performed with a 10,000 psi hydroblaster, in conjunction with a low pressure/high volume jet pump.

2.4.5 Cutting Methodology Using Explosives

2.4.5.1 Internal Cut

The piling and conductors to be cut will be accessed internally to complete the cut. An explosive charge will be lowered from the production deck elevation to a point approximately 3 feet below natural mudline (15 to 25 feet below the existing mudline). As such, all explosive cuts would occur within the piles or conductors and no open water detonations would occur. This will confine the explosive impacts to below the base of the platform legs and below the existing mudline (see Figure 2.4-1).

2.4.5.2 Explosive Charges

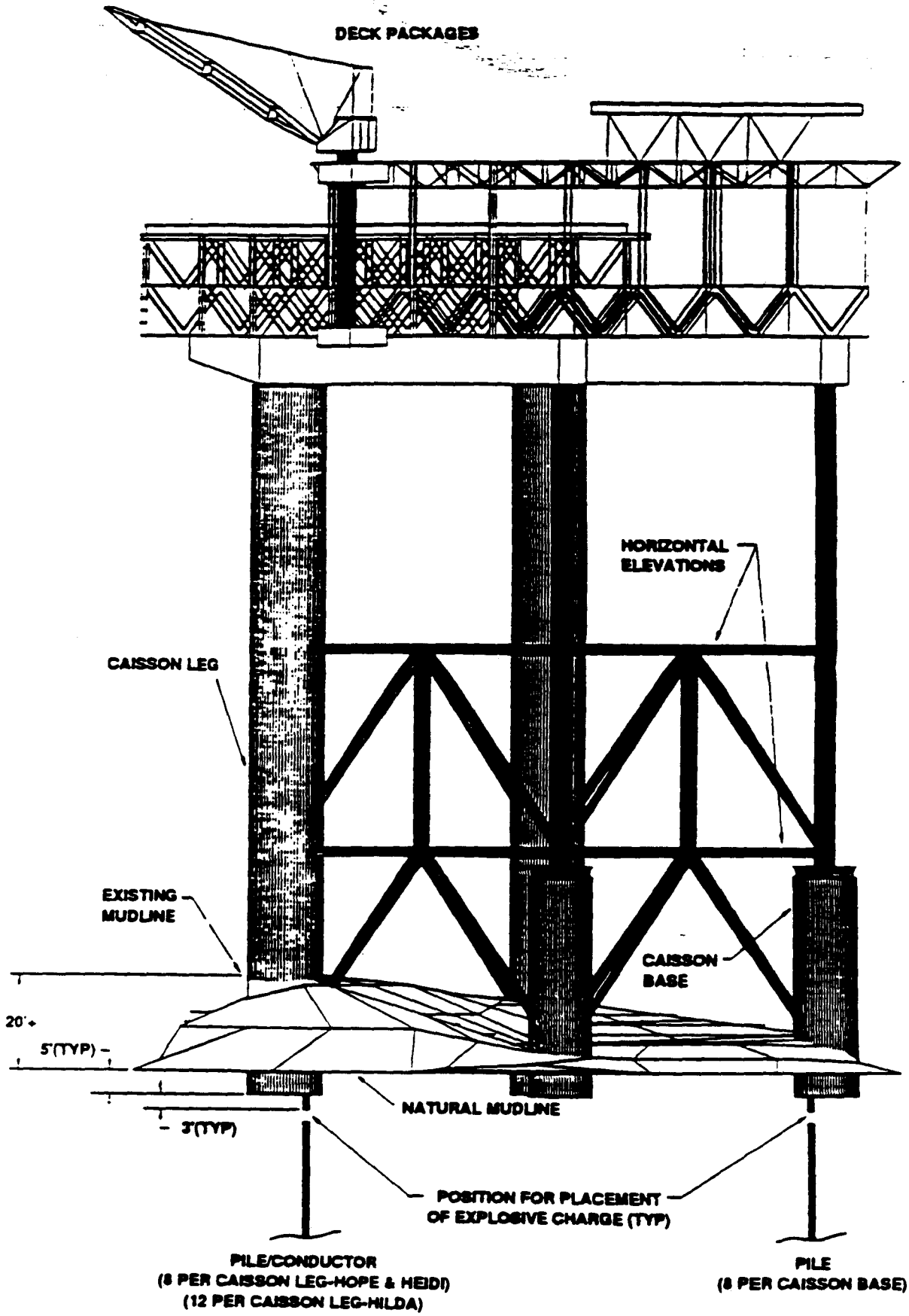
The explosive charges will be cylindrical in shape, and will be lowered down hole with a concrete weight above the charge. The concrete will provide a tamping effect when the charge is detonated. The charge will be designed in accordance with the "collision charge" principle, to detonate from the top and bottom ends simultaneously, creating an outward cutting force when the explosions meet in the center of the charge (see Figure 2.4-3 for placement of charge location, and Figure 1.4-1 in the Discussion of Environmental Impacts for a graphic depiction of this process). The explosive proposed is nitromethane, a binary explosive which consists of two liquids, neither of which is individually classed as an explosive. This allows for simpler and safer transportation and storage of the material. No hazardous substances will be released to the ocean following detonation of the explosive charges. Chemicals used in the explosive charges will become inert gasses following detonation.

2.4.5.3 Explosive Charge Size

There will be 32 to 40 individual charges each containing between 25 and 45 pounds, depending on the material to be cut, of explosive material detonated per platform .

2.4.5.4 Staggered Charges

The detonation of charges will be staggered to limit the water shock forces to the magnitude of one charge at a time.



HOPE, HEIDI, AND HILDA ABANDONMENT
PLACEMENT OF EXPLOSIVE CHARGES
FOR CONDUCTOR/PILE CUTTING OPERATIONS

SOURCE: International Diving Services

CALENDAR PAGE	598
MINUTE PAGE	3299

FIGURE 2.4-3

2.4.5.5 Duration of Cutting Operations Using Explosives

It is estimated that cutting operations will be performed for approximately 3 to 4 days per platform.

2.4.6 Mechanical Cutting Methodologies

As an alternative to explosives, two mechanical cutting methodologies have been evaluated for this work. The first is a casing cutter using a cutting tool on a rotating drill string, and the second is abrasive cutting using a grit entrained high pressure water jet system. In addition, embrittlement techniques were reviewed but not evaluated further due to logistical constraints.

2.4.6.1 Casing Cutter

This method is similar to methods used in normal drilling operations for cutting casing and well conductors for abandonment. In a platform removal application, a portable system would be used without the drilling rig. The system is comprised of a power swivel, drill string, and cutting tool, which are lowered downhole by the platform crane or a portable crane. The casing cutter has a three blade carbide cutter that is lowered into the well in the retracted configuration to the cut location. The blade opens when hydraulic (water) pressure is applied to the bit, and the power swivel turns the assembly on the platform drill deck.

2.4.6.2 Abrasive Cutter

This method incorporates a high pressure water jet with a grit entrainment system to force particles (i.e., copper slag) into the cut at pressures up to 10,000 psi. The cutter nozzle is fitted on a robotic assembly that is lowered down the well conductor or pile. The assembly rotates the cutter nozzle around the circumference of the conductor to be cut. Cutting rates are adjusted based on the wall thickness and number of strings to be cut.

These mechanical cutting methods have not proven to be highly reliable in actual field experience and require a stable work platform (i.e., platform decks).

2.4.6.3 Embrittlement Technique

The embrittlement technique (extreme cold being applied to the structural member followed by a physical blow. The blow results in the crackling and separation at impact point). Such a method may be effective on exposed members, but would be extremely difficult to conduct in

the confined piles and conductors below mudline; therefore this method is not considered practical.

2.5 JACKET REMOVAL

2.5.1 General

After the topside decks have been removed, a dive crew will be used to cut the jacket into liftable sections. Structural members of the platform jacket will be cut by divers with oxy-arc torches.

2.5.2 Aids To Navigation

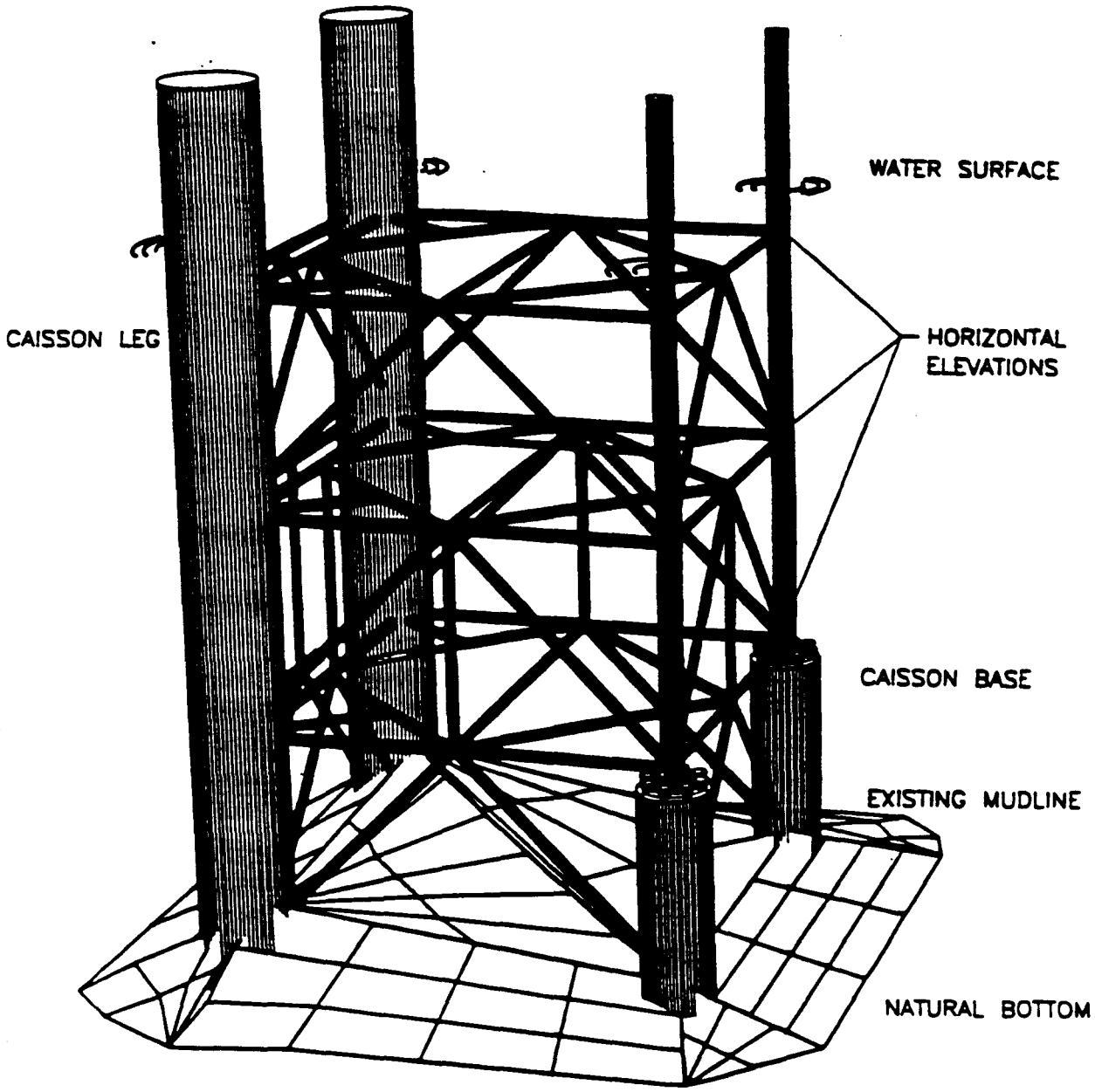
The existing aids to navigation on the platform (lights) will be maintained during the topsides removal and during the jacket removal. These lights will be relocated on the legs after the decks are removed to provide identification at night, if the barge is required to move off location.

2.5.3 Equipment

The derrick barge and tug boat used for topsides removal will be used to remove the jacket. Materials barges from 180-foot LOA to 400-foot LOA will be used to receive the jacket sections lifted. These barges may be stored on separate moorings near the structure and will always be tended by at least one tugboat in the area. Additional vessels, such as crew boats and a diving support vessel, will be used as required.

2.5.4 Removal Plan for Platforms Hope, Heidi, and Hilda

Platforms Hope, Heidi, and Hilda all have similar structural configurations, including two large caisson legs originally used to float the jacket to the project site. Once at the platform installation site, these legs were flooded and sunken in place (see Figure 2.5-1). The reverse of this process will be used to remove the structure. Many details of the jacket removal plan will depend on the equipment used by the demolition contractor selected for this work. A likely sequence of events is described as follows:



SOURCE: International Diving Services

PLATFORMS
HOPE, HEIDI, AND HILDA
WITH DECK PACKAGES REMOVED

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FIGURE 2.5-1

2.5.4.1 Upper Bracing Removal

The jacket will be removed from the top down to maximize diver safety. Each lift will be stacked on a materials barge for storage and transport. The bottom horizontal elevation will be left in place to maintain some stability between the legs (see Figure 2.5-2).

2.5.4.2 54-Inch Leg Removal

The 54-inch-diameter legs will be removed down to the caisson bases at the bottom horizontal elevation. Each lift will be stacked on a materials barge for storage and transport. This will leave the large caisson legs, the bottom horizontal elevation, and the caisson bases intact.

2.5.4.3 Caisson Leg Removal

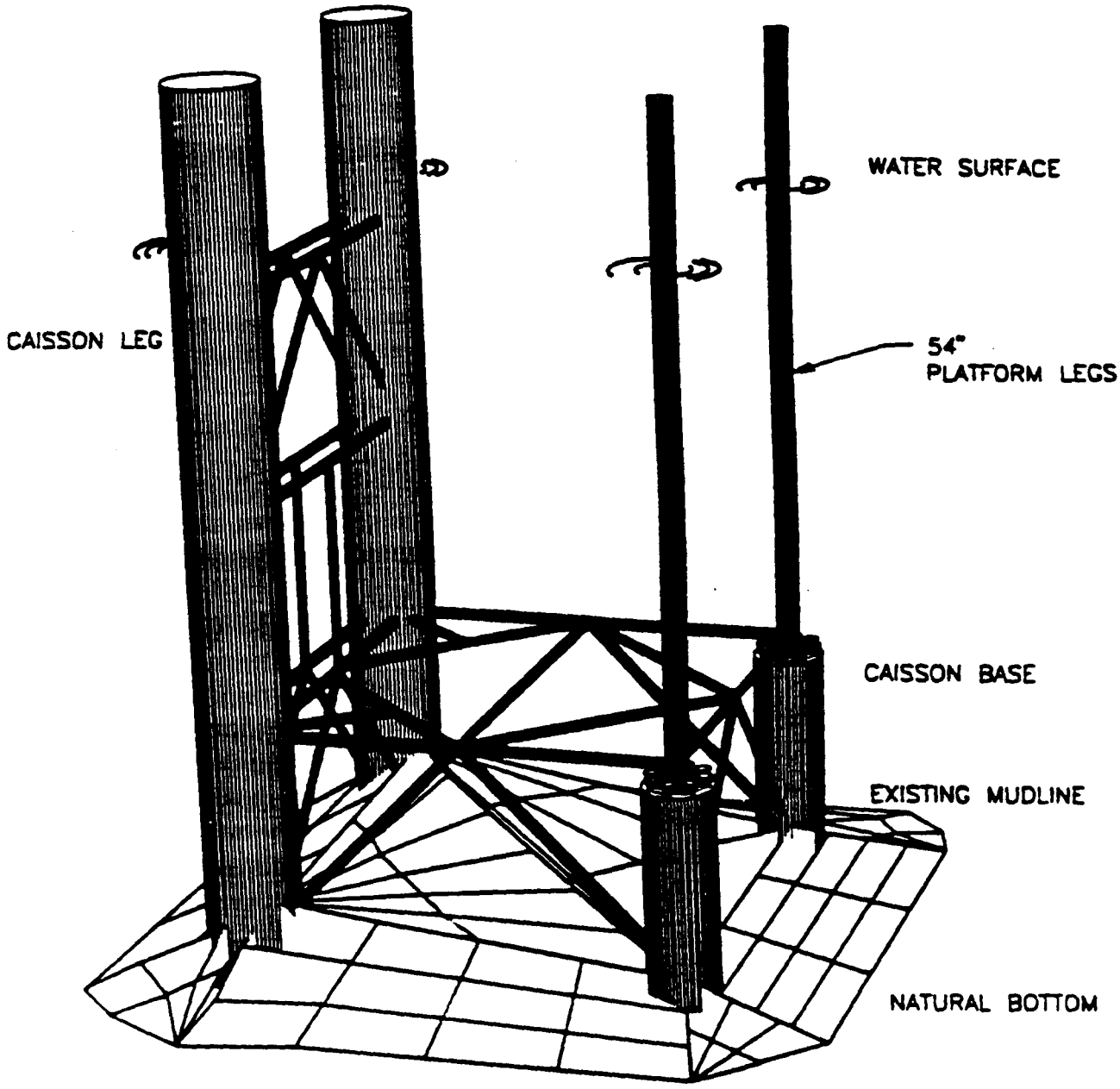
Final cuts utilizing torches will be made on the bottom horizontal bracing to separate the large caisson legs from the rest of the structure. No explosives would be used for this procedure. All bracing between the two caisson legs will be left intact. The derrick barge will adjust position, and a tug will attach a tow bridle to the caisson legs (see Figure 2.5-3). Pumping will be commenced from a utility vessel to deballast a portion of the legs to achieve moderate positive buoyancy. Upon achieving positive buoyancy, the tug will initiate pulling operations to free the caisson legs from the bottom. Additional pulling forces may be applied by winches on the derrick barge to achieve the breakout force required. The legs will be freed, and pumping operations will continue from the utility vessel while the tug tows the legs to a secure location. Upon completion of pumping operations the legs will be moored to a temporary mooring until towing preparations have been completed (see Figure 2.5-4). The legs may be separated before towing by cutting and recovery of connecting bracing and conductor guides alongside the derrick barge.

2.5.4.4 Bottom Bracing Removal

The bottom bracing will be cut and loaded on the materials barge.

2.5.4.5 Caisson Base Removal

The caisson bases for the 54-inch legs will be removed one at a time. Drain holes will be cut in the caissons to allow water to drain as the load is held at the surface. The caisson bases will be placed on the materials barge for transport and disposal (see Figure 2.5-5).

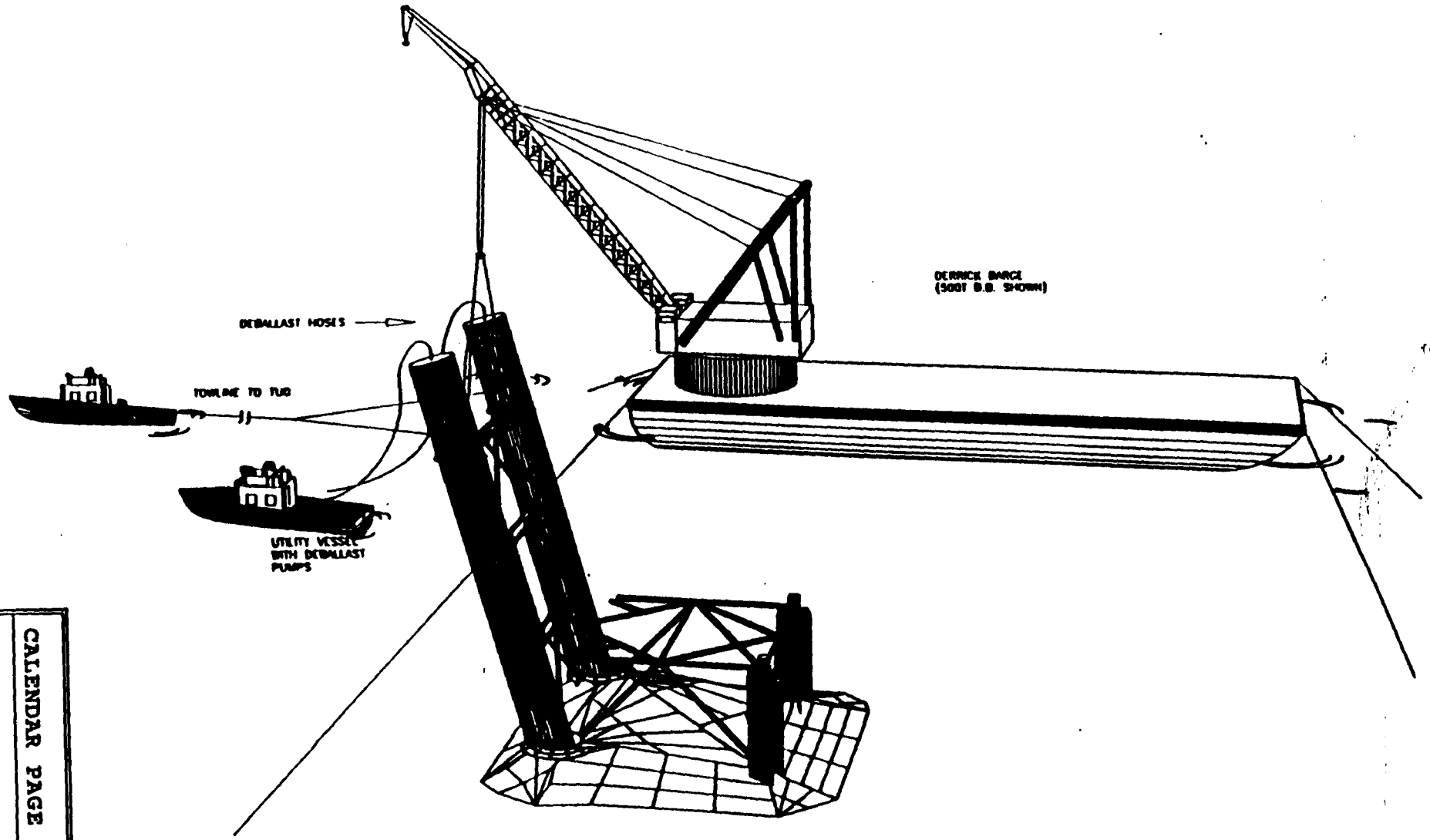


SOURCE: International Diving Services

PLATFORMS
HOPE, HEIDI, AND HILDA
WITH UPPER BRACING REMOVED

CALENDAR PAGE	603
MINUTE PAGE	3304

FIGURE 2.5-2



DERRICK BARGE REMOVES CAISSON LEGS PLATFORMS HOPE, HEIDI AND HILDA

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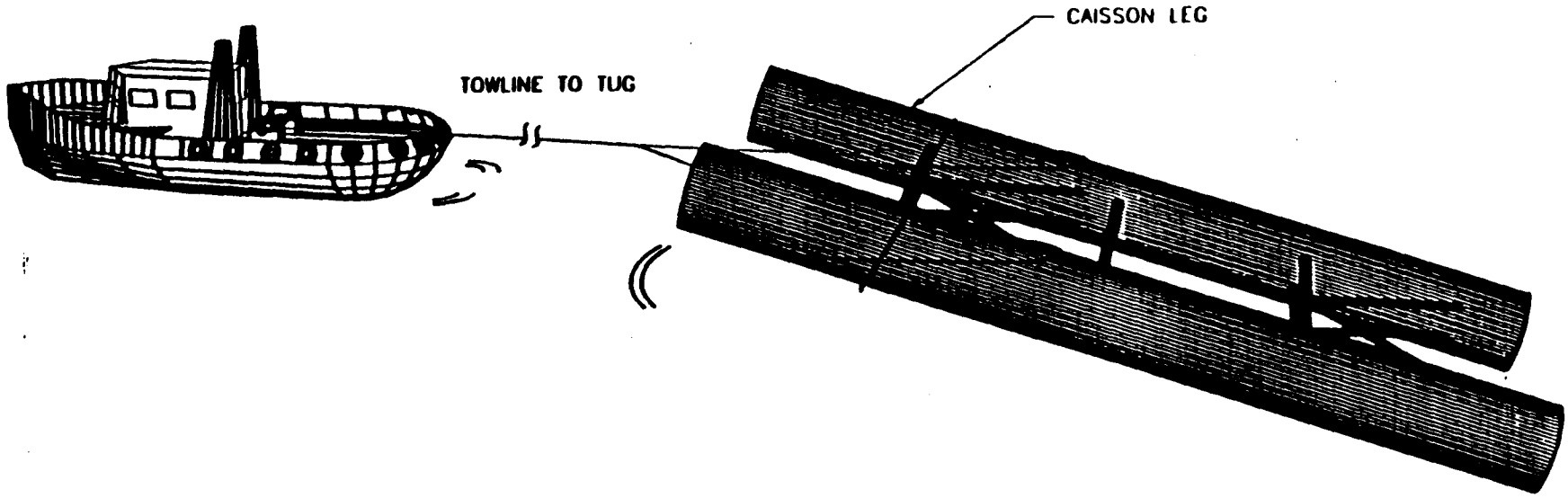
MINUTE PAGE 9005

SOURCE: International Diving Services



CAISSON LEGS UNDER TOW DURING FINAL DEBALLASTING PLATFORMS HOPE, HEIDI AND HILDA

SOURCE: International Diving Services

FIGURE 2.5-4

2.5.5 Removal Plan for Platform Hazel

Platform Hazel is a gravity-based structure which utilizes four caisson bases to anchor the jacket structure. These four caisson bases were used to float the jacket to the project site. Once at the platform installation site, these caissons were flooded, sunk in place, and filled with sand and cement.

2.5.5.1 Upper Bracing Removal

The jacket will be removed from the top down to maximize diver safety (see Figures 2.5-6 and 2.5-7). The 36-inch-diameter vertical legs will be removed down to the caisson bases. Each lift will be stacked on a materials barge for storage and transport. This will leave the grouted caisson bases and the bottom horizontal elevation and some vertical diagonal braces buried in place. The legs will be removed at 1 foot below existing mudline, to meet with State Lands Commission abandonment procedures. Explosive cuts will not be made on Platform Hazel. The platform jacket legs will be cut with oxy-acetylene torches near the top of the caisson base which is located just below the existing mudline.

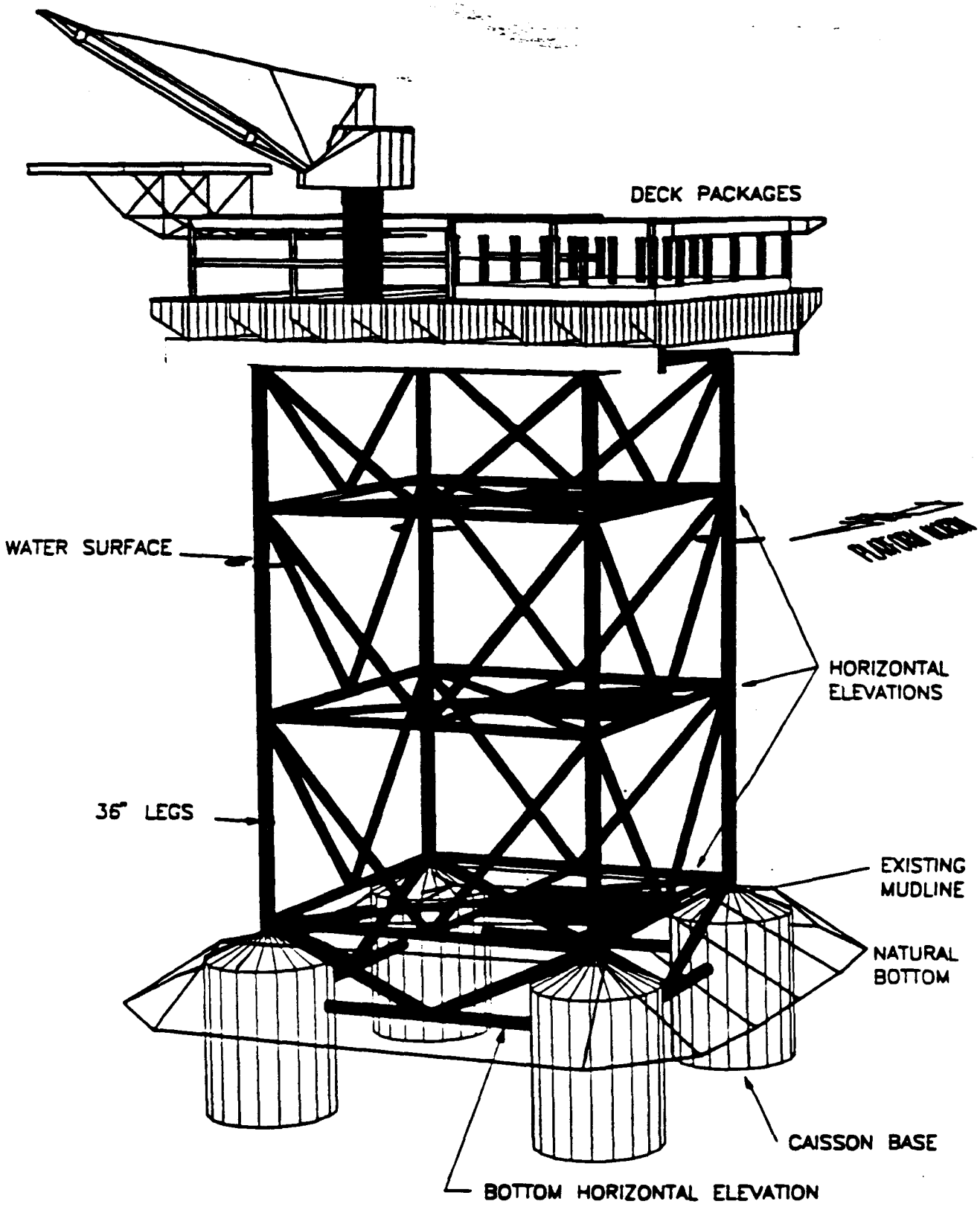
2.5.5.2 Caisson Base Abandonment

The caisson bases for the 36-inch legs will be left in place, along with the connecting tubular braces, all of which are buried. The existing mudline at the platform is now above the top of the caissons (see Figure 2.5-8).

Depth of burial of Platform Hazel's caisson bases and cross members varies across the platform base. Surveys indicate that the disposal pile and associated marine growth reach approximately 26 feet above the natural mudline. Abandonment operations will remove the platform legs to the top of the caisson base or at least 1 foot below mudline, whichever is higher. A post-abandonment survey of the site will confirm the condition of the remaining mound. Should any part of the platform, caissons, or cross members be exposed, Chevron will remove any exposed structural components.

2.5.6 Debris Recovery

The debris on bottom will be recovered by divers after the final heavy lifts have been made. Further debris location will be performed using Mesotech 971 Color Scanning Sonar or equivalent, operated from an ROV or held by a diver. The debris recovery will be performed over a 1,000-foot radius from the platform. Targets located during the pre-abandonment debris



SOURCE: International Diving Services

WELL CONDUCTORS REMOVED
PLATFORM HAZEL

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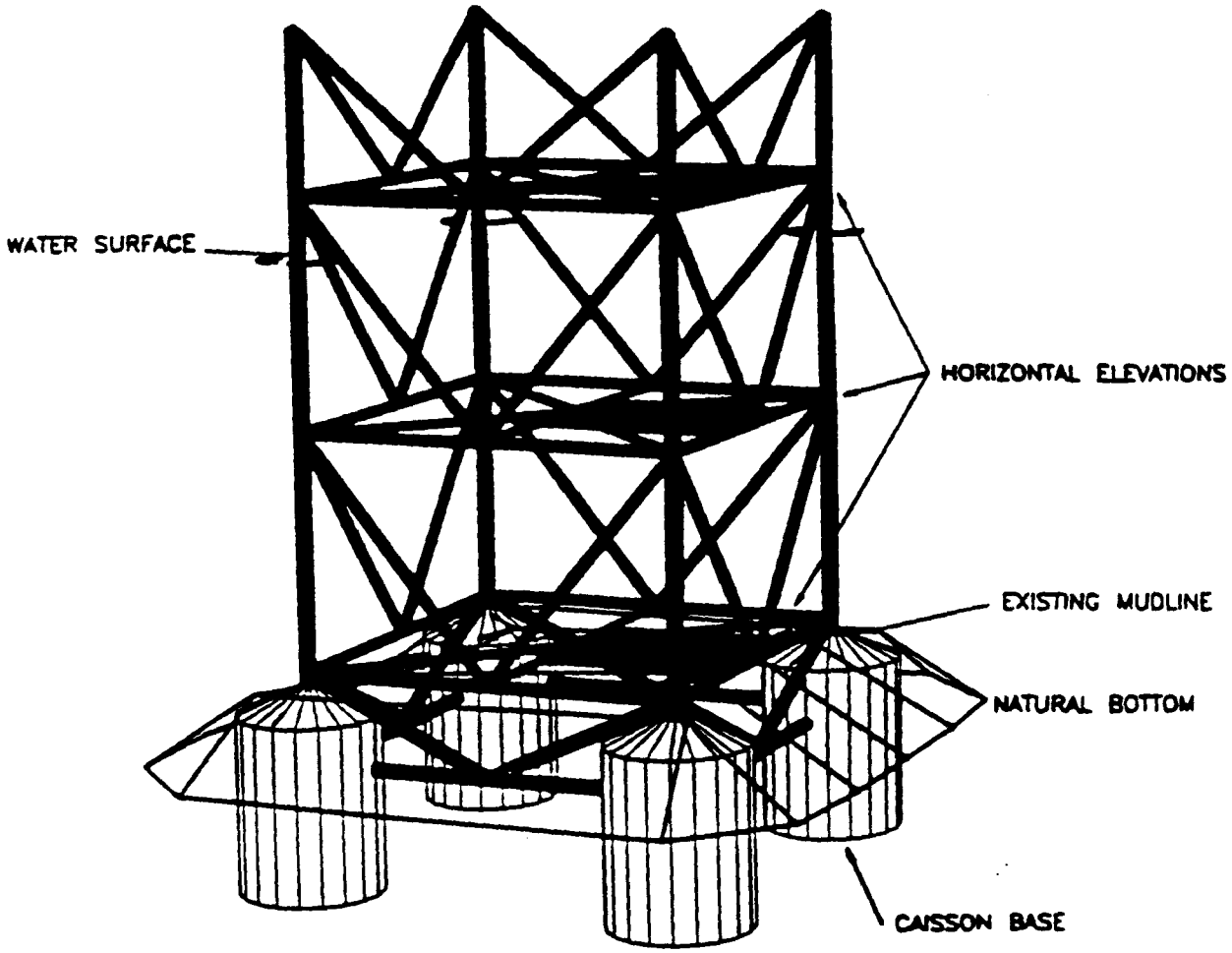
FIGURE 2.5-6



SOURCE: International Diving Services

DECK PACKAGES REMOVED
PLATFORM HAZEL

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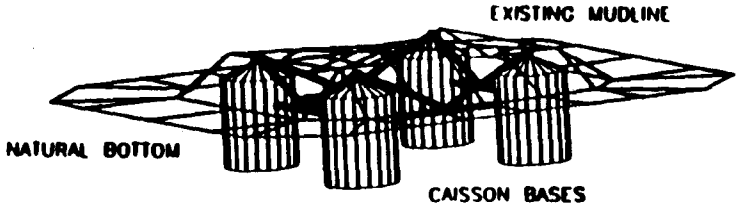
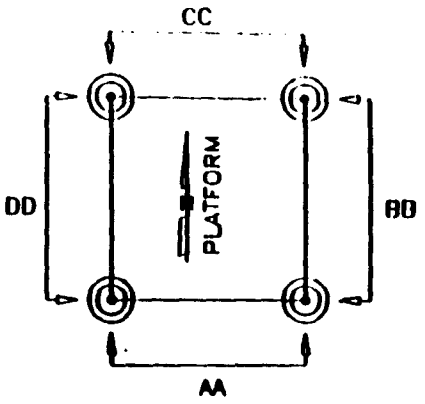
MINUTE PAGE	3309

FIGURE 2.5-7



THREE DIMENSIONAL VIEW



VIEW BB
EAST ELEVATION

VIEW DD
WEST ELEVATION

VIEW AA
SOUTH ELEVATION

VIEW CC
NORTH ELEVATION

NOTE:
CAISSON BASES ABANDONED IN PLACE. LEGS WILL BE CUT FLUSH WITH TOP OF CAISSON BASE OR ONE FOOT BELOW EXISTING MUDLINE (WHICHEVER IS HIGHER). VERTICAL DIAGONAL BRACES WILL BE CUT OFF, IF NECESSARY IN LIKE MANNER.

CAISSON BASES ABANDONED IN PLACE
PLATFORM HA

MINUTE PAGE 2240
CALENDAR PAGE 609

survey will be verified and identified using an ROV or divers, with the assistance of a satellite surface navigation system integrated to an acoustic tracking system. Targets that are verified as debris will be recovered by divers with assistance from a surface crane onboard the diving support vessel. At the same time the anchor scars left by the derrick barges will be examined and leveled if necessary.

2.6 PIPELINE ABANDONMENT

2.6.1 General

The platform decommissioning operations will include the flushing and pigging of all pipelines as discussed in Section 2.6.2 below. Such operations will be conducted prior to platform structure removals. These pipelines were originally installed on the sea bottom; however, natural sediment deposition has resulted in the burial of most of the pipelines. To avoid disturbance to the natural bottom, the pipelines will be abandoned in place. Annual ROV surveys conducted by Chevron between the years 1986 and 1991 have been reviewed to determine the burial state of the lines. The annual surveys confirmed that all offshore portions of the lines between Platforms Hilda and Hazel and between Hazel and the shoreline are buried approximately 200 feet from the platforms and remain buried through the surf zone. Visual surveys of nearshore regions have also confirmed complete burial of the Hazel pipelines. The pipelines between platforms Heidi and Hope are intermittently exposed but they are completely buried for the majority of their route.

Actual depth of burial cannot be determined from the ROV surveys. Removal of exposed segments of pipeline would result in impacts associated with cutting the segments and burial of the pipeline ends. Bottom disturbance in such a case could be a potentially significant environmental impact, depending on depth of burial, sediments in place, and benthic communities present. Abandonment in place of the entire length also provides bottom stability for the whole pipeline.

The pipelines will be separated from the platform riser, capped, and the ends jetted down below mudline. No pipelines will be cut or opened until testing of flushed seawater confirms removal of residual hydrocarbons to acceptable levels.

2.6.2 Flushing and Pigging of Pipelines

The existing shipping pumps on the platforms will be used to pump a minimum of two pipeline volumes of seawater and two scraper pigs or oversize poly-pigs to remove hydrocarbons

remaining on the interior walls of the pipelines. Additional seawater will be pumped, as necessary, until no visual hydrocarbons are present in the flush water.

Flush water will be pumped to the Carpinteria plant, treated through the oil/water separators, and discharged in accordance with the plant's NPDES permit. Water quality analysis will be conducted on the flushed water as required by the permit.

2.6.3 Removal of Spool Pieces and Pull Sleds

After the pipelines have been flushed, they will be disconnected from the platform risers at the seafloor and capped. Where possible, the pipelines will be disconnected at existing subsea flanges at the seafloor and a blind flange will be installed to cap the line. If an existing subsea flange is not available, the pipeline will be cut at the seafloor using an oxy-arc torch. The pipeline stub will be capped using a cylindrical sleeve with a plate seal welded to one end. The open end of the sleeve will be placed over the end of the pipe stub and three contact bolts will secure the sleeve to the pipe. The annulus between the sleeve and the pipe will be sealed with an epoxy sealing compound.

The pipe spool piece between the pipeline cut location and the platform riser will be disconnected from the riser and recovered. The pipeline risers will be recovered with the platform jackets.

2.6.4 Burial of Pipeline Ends

The pipeline ends will be jetted in 1 foot below mudline using a high volume diver-held hand jet, and the excavation will be backfilled in a similar manner. The pipeline pull sleds will be left in place if the pipelines are below mudline prior to cutting. If the pipelines are exposed at the cut location, the pull sled will be removed to facilitate burial of the pipeline end.

2.6.5 Nearshore Pipeline Abandonment

2.6.5.1 Platform Hope to Shore

Two of the three pipelines running from Platform Hope to shore will continue to transport OCS oil and gas after Hope has been removed, and their abandonment is not included in this project. The third pipeline will be out of service but will remain in place. The nearshore abandonment of this pipeline will be performed in conjunction with the pipelines which are being left in service. The platforms currently serviced by these pipelines include Hope, Heidi, Grace,

and Gail. Platforms Grace and Gail will continue to transport through two of these pipelines, which reach landfall to the east of Casitas Pier and are listed as follows:

10-inch SACS oil/water
10-inch Oil Gail/Grace
10-inch Gas (Combined Streams)

Prior to Platform Hope jacket removal, the 10-inch Gail/Grace oil and the 10-inch gas pipelines will be rerouted 150 feet east of the structure. The proposed pipeline rerouting is being processed as a separate project and will be evaluated under the auspices of the California Coastal Commission in conjunction with the County of Santa Barbara and other responsible agencies.

2.6.5.2 Platform Hazel to Shore

The three pipelines servicing Hilda and Hazel and running to shore will be abandoned in place to minimize environmental impacts associated with removal operations. As such, no disruption of the beach or bluff face will occur. Over an approximately 30-year period, the Hazel-to-shore pipelines have remained buried during numerous severe storms. Monitoring of the pipeline landfall has confirmed that the pipelines have remained buried and future exposure by natural forces is unlikely. In addition, abandonment in place poses no significant risk or hazard and, thus, represents the environmentally superior alternative to the disruption caused by removing the lines across the beach. The pipelines to be abandoned are as follows:

8-inch (Out of Service)
6-inch gas
6-inch oil and water

a. **Pipelines Grouted 800 feet Offshore from Bluff.** Upon completion of the flushing and pigging operations, the nearshore segment of the three pipelines will be grouted. Each line will be grouted in a separate operation from a portable cement unit located onshore. A pig will be inserted into the pipelines at the valve box on the bluff and grout will be introduced and pumped until the pig is at a point where the water depth offshore is -15 feet MLLW (approximately 800 feet) from the bluff. This measurement will be based on volumetric calculations. As previously stated, the pipeline is completely buried from the bluff through the surf zone. Abandonment in place with internal grouting avoids the impacts associated with exposing and removing the pipeline in the surf zone and beach.

2.6.6 Offshore Pipeline Abandonment

2.6.6.1 Platform Heidi to Hope Pipelines

The Heidi to Hope pipelines are comprised of the following lines:

10-inch Gas Lift
10-inch Gas
10-inch Oil and water

These lines will be abandoned in place as described in items 2.6-1 through 2.6-4 above.

2.6.6.2 Platform Hilda to Hazel Pipelines

The Hilda to Hazel pipelines consist of the following lines:

8-inch Out of Service
6-inch Gas
6-inch Oil and water

These lines will be abandoned in place as described in items 2.6-1 through 2.6-4 above.

2.6.6.3 Pipelines to Subsea Wells

Abandonment of the subsea wells located shoreward of Platform Hilda will be conducted as a separate project and evaluated under separate permitting and environmental review. The pipelines between these wells and platform Hilda will be abandoned in place prior to the platform removal as described in items 2.6.2 through 2.6.4 above. The pipelines associated with the subsea wells are as follows:

4-inch Flowline - Pool
4-inch Flowline - Gauge
2-inch Gas Lift
1-inch Hydraulic

2.7 POWER CABLE ABANDONMENT

2.7.1 General

Electrical power supply to each platform is currently provided by subsea cable. Since their installation, these cables have been buried by natural sediment deposition. To avoid disturbance to the natural bottom, these cables will be abandoned in place, except in the case of the shore end of the cable to Platform Hope. The power cables will be cut at the base of each platform and the ends will be jetted down into the bottom.

2.7.2 Cable Cutting

The power cable will be excavated where it enters the mudline using diver-held air lifts. The cable will be cut one foot below mudline with an oxy-arc torch or a mechanical cutter.

2.7.3 Cable End Burial

The cable end will be jetted down an additional foot and covered with natural sediment. A hand jet will be used to backfill around the exposed cable end.

2.7.4 Nearshore Abandonment of Hazel Power Cable

The power cable to Platform Hazel comes ashore at Loon Point in Summerland where it terminates in a switchgear box on the top of the bluff. This cable was buried several feet in the nearshore area when it was installed. To avoid disturbance to the beach and bluff, the cable will be abandoned in place. The cable will be severed at the switchgear box and the cable end will be reburied.

2.7.5 Nearshore Abandonment of Hope Power Cable

The power cable to Platform Hope comes ashore at the end of Casitas Pier. This cable was not trenched originally, and lies near the mudline, where it is possible that it could be exposed in the future. The cable will be severed at the junction box at the end of the pier and at a subsea point 800 feet offshore from the bluff, where it becomes buried deep enough to prevent exposure. The cable between the end of the pier and the subsea cut will be recovered and the end of the cable will be jetted down as described in item 2.7.3.

2.8 SITE CLEARANCE VERIFICATION

2.8.1 General

Verification of site clearance will be performed as part of the final debris recovery operation.

2.8.2 Side Scan Sonar Survey

The survey will be performed using a 500-khz side scan sonar system such as the Klien 595 or equivalent. The survey will be supported from a support vessel with a length of at least 50 feet. Positioning will be provided by a navigation system with 3-meter accuracy. Underwater positioning will be based on slant range calculations.

2.8.3 Procedures

Survey lines will be run at 50-meter spacing in lines running East to West and North to South. Coverage will be with overlapping survey lines with complete coverage of the platform site. Tow speed will be between 3 and 5 knots.

2.8.4 Data Reduction

The data will be reduced in the field and suspect targets will be listed and plotted for target verification survey.

2.8.5 Target Verification

The suspect targets located with side scan sonar will be visually surveyed with an ROV and Mesotech 971 Color Scanning Sonar or equivalent. Suspect targets which are identified as debris will be plotted for recovery operations.

2.8.6 Debris Recovery

The debris located will be recovered by divers to complete the site clearance verification. Pre- and post-abandonment surveys will be conducted within a 1,000-foot radius of the platforms. Test trawls will also be conducted in the area. No trawls are proposed along the pipeline route, as the Department of Fish and Game states that this is a "no trawl" area. It should also be noted

that most of the trawl fishermen in the area have already been supplied rollers for their trawl gear by Chevron to mitigate potential gear impacts from oil and gas pipelines.

2.9 PLATFORM DISPOSAL

2.9.1 General

The platform materials will be taken to the Port of Long Beach/Los Angeles for onshore disposal. The possibility for creating an artificial reef with the jacket materials has been investigated, but the current policy of California's Department of Fish and Game is not to create such reefs from scrap material.

2.9.2 Caisson Legs

The caisson legs will be towed to the scrapping site floating by their own buoyancy. The large size and weight of the legs will make it feasible to use drydock facilities for scrapping.

2.9.3 Other Materials

Various steel scrapping facilities have been identified in the Ports of Los Angeles and Long Beach that have the necessary equipment and permits in place to process the abandoned platforms. The facility that is actually used will depend on its storage capacity, steel processing rate, and availability at the time the platforms are removed. It is possible that more than one facility will be used to process the platforms. The steel processing rate for one of these facilities is 160 tons/day. At this rate, scrapping all of the platform steel would take 16 weeks. Information on the scrapping facility that is selected will be provided when available. Offloading will be performed with the derrick barge or land-based crane, depending on the size of the lifts and reach requirements.

2.9.4 Disposal of Materials that Cannot Be Scrapped

Approximately 13,000 tons of material will be generated from the abandonment project and sent to a scrapping facility. This total includes 2,200 tons of material that will be landfilled, such as cemented pipe strings. The remainder of the material is steel which is suitable for scrapping. The platforms will contain no hazardous materials at the time they are removed.

2.9.5 Vessel Traffic Routes

All vessel traffic associated with the project will stay within designated vessel traffic routes established for shore to platform and inter-platform travel. Materials barges will stay within designated shipping lanes when travelling from the project area to the Port of Long Beach/Los Angeles. It is anticipated that towing will take 40 hours per platform.

3.0 CRITICAL OPERATIONS AND CURTAILMENT PLAN

3.1 INCLEMENT WEATHER CONDITIONS

The final determination for shut down of operations due to inclement weather will be made by the barge superintendent, or vessel captain, in conjunction with the removal contractor project manager. Conditions warranting shut down include heavy swell and high winds, but shut down will also be influenced by the swell period, and the direction of wind and swell. The particular vessels affected and their size will also affect the capability to continue work in marginal conditions. As a general rule, sea states of over 8 feet, and winds in excess of 35 knots may cause a shut down. Some operations which are less weather sensitive may continue, as directed by the removal contractor.

3.2 DYNAMIC LIFTS

The removal of major sections of the platform deck packages by a derrick barge will involve some movement from the barge in the swell. Without preparations, this movement could make it difficult to safely reset the package if the lift is aborted. Any lift where safe resetting of the package may be difficult will be engineered with guides installed to control the package movement horizontally for approximately 2 feet of vertical movement. To prevent damage to the oil and gas pipelines from Platform Grace, no heavy lifts will be made over the pipelines service during the removal of Platform Hope.

3.3 DEPLOYMENT OF DIVERS

Divers may be deployed from the platform, barges, tugs, or other support vessels during the project. The diving supervisor will have radio communication with all other vessels on the project to coordinate traffic in the divers' area. The diving supervisor shall approve vessel traffic in the divers' work zone. All diving operations will be performed in accordance with U.S. Coast Guard regulations.

3.4 MOORING OPERATIONS

The process of setting anchors for barges and workboats will be performed as follows:

- Prior to the platform removal project, the position of any active pipelines and hardbottom features in the area will be verified by the pre-abandonment debris survey. The pipeline and hardbottom area locations will be plotted on the positioning system

used by the anchor handling vessels which will deploy the anchors in preselected locations that are away from active pipelines and hardbottom areas. This procedure should eliminate any risk of damaging the pipeline and sensitive hardbottom areas with an anchor.

- Anchors will be transported near the water surface by a tug, holding the crown wire, and a crown buoy. All anchors shall be deployed and recovered by a tending vessel using a pendant line to lower and raise the anchors vertically.

- The anchor location will be identified by a survey system with 3-meter accuracy.

- The tug will lower the anchor to the seafloor in the surveyed position, followed by tensioning from the barge.

- The crown buoy position will be monitored during tensioning to verify that the anchor remains in an approved location.

- Periodic checks of the crown buoy position will be made.

3.5 USE OF EXPLOSIVES

The use of explosives will be conducted in accordance with all laws and regulations regarding such activity.

- A licensed State of California blasting supervisor will direct the work, and will coordinate the clearance of the site prior to making a shot.

- Explosives will be stored in a safe manner and in well-marked containers. Nitromethane, which will be used as the main charge, is not classed as an explosive when stored prior to mixing.

4.0 OIL SPILL CONTINGENCY

The proposed execution plan has been designed to ensure the safe and effective removal of the four state waters platforms. Prior to removal of the platform structures and abandonment of subsea pipelines, all oil handling facilities will be drained and flushed of residual hydrocarbons. All wells on the platforms will have been plugged and abandoned in compliance with California State Lands Commission and Division of Oil and Gas requirements.

Despite these precautions, the potential for a small operational spill still exists for the proposed operations. Such spills would most likely be associated with diesel fuel transfers or accidental releases. The following section provides an overview of the initial procedures and equipment which will be available in the event of an oil or diesel spill at the project site. Such procedures and equipment have been designed to handle the most likely spill events. Should the spill exceed the capacity of the onsite equipment and personnel, additional resources are available through Chevron's local oil spill response organization and Clean Seas Oil Spill Cooperative. Procedures and equipment for major and minor spill events are outlined in Chevron's Oil Spill Contingency Plan (OSCP) for State Leases. This section provides only a summary of the comprehensive procedures and equipment outlined in the OSCP.

4.1 NOTIFICATION

An important step in the response procedure is notification of others of the incident. Notification is essential to activate the response organizations, alert company management, obtain assistance and cooperation of agencies, mobilize resources and comply with local, state, and federal regulations.

The order of notification is based on the premise that those parties who can mobilize and provide assistance in controlling or minimizing the impacts of an incident be notified first. The notification process encompasses the following categories:

- Company Notification
- Agency Notification
- Response Team Activation
- Third Party Notification
- Notification of Other Interested Parties
- Notification of Families of Team Members
- Periodic Progress Updates and Reports
- Accidents and Casualties Notifications

Figure 4.1-1 illustrates a typical sequence of notifications following an oil spill that enters or threatens to enter the ocean.

4.1.1 Confirmation of Leak Report

Upon receipt of the initial report of an oil spill, the Operations Supervisor will make an immediate assessment of the approximate quantity and extent of the spilled oil. Normally, this initial assessment can be made by rapid inspection at the operations site. The On-Site Operations Supervisor will evaluate the situation and, if the situation warrants, will activate the Immediate Response Team and make the appropriate notifications.

4.1.2 Company Notification

Chevron requires that all emergencies be brought to the immediate attention of its management. The Operations Supervisor or his representative on-site will notify the Operations Manager by radio or telephone with an initial assessment of the extent and nature of the spill. The Operations Manager will inform the Profit Center Manager or his representative who will decide to activate all or part of the Major Spill Response Team. If activation is deemed appropriate, the Profit Center Manager authorizes the activation sequence as shown in Figure 3.2 of Chevron's OSCP for State Leases.

4.1.3 Government Agency Notification

Following the completion of company notifications, Chevron's Operations Supervisor will notify all required government agencies. These agencies include:

USCG National Response Center
(800) 424-8802

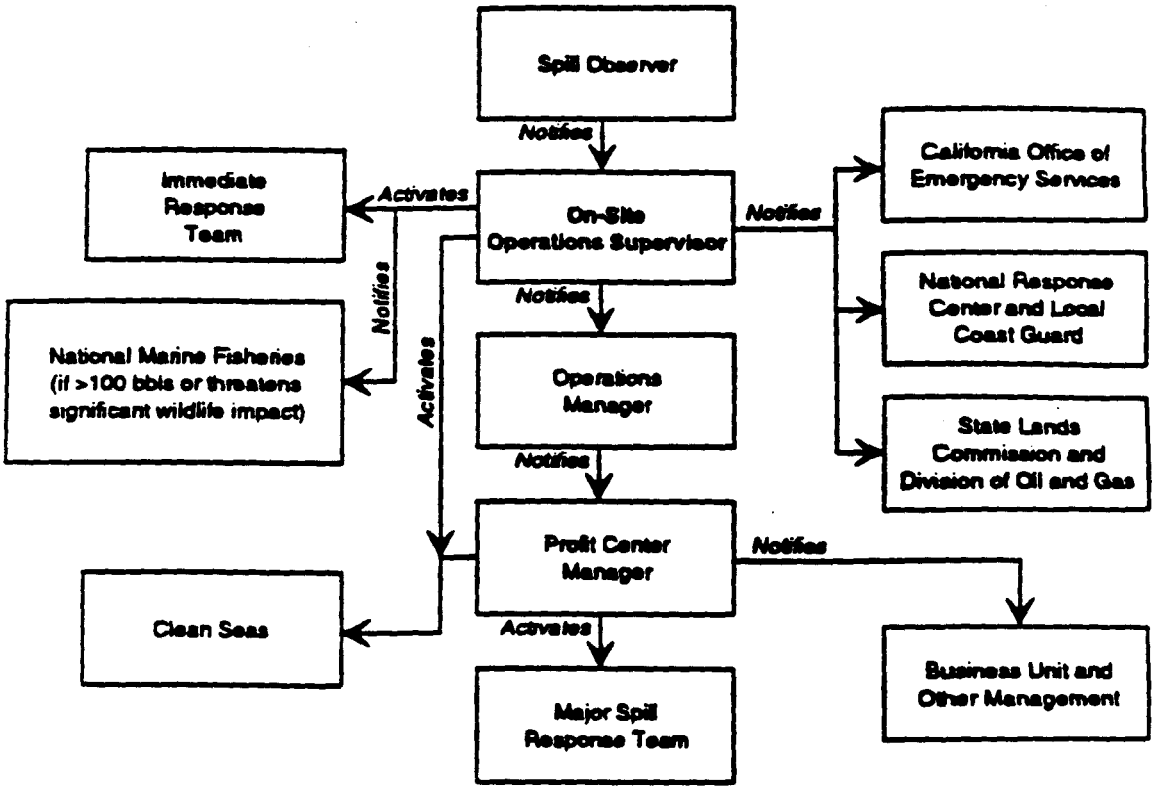
California Office of Emergency Service
(800) 852-7550

USCG Santa Barbara Office
(805) 962-7430

State Lands Commission
(310) 590-5201

4.1.4 Oil Spill Cooperative Notification

Chevron is a partner in the Clean Seas cooperative. The cooperative provides oil spill equipment and resources that are immediately available. If a spill exceeds Chevron's in-company response equipment capability, Clean Seas will be notified immediately. Resources available through Clean Seas are listed in Section 4.4, Available Oil Response Equipment (Resources).



TYPICAL NOTIFICATION PROCEDURE

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FIGURE 4.1-1

4.2 RESPONSE STRATEGY

4.2.1 General Response Strategy

In the event of a spill from a Chevron facility or associated pipeline in state waters, the appropriate Chevron personnel and government agencies will be notified per the procedures given in Section 3 - Notification, of Chevron's OSCP for State Leases.

If the spill is minor, normally only the Immediate Response Team described in Section 4 - Organization, of Chevron's OSCP for State Leases will be activated. Response procedures for minor spills are discussed in the same section and in Section 9 - Procedures.

If the spill is of major magnitude, both the Immediate Response Team and the Major Spill Response Team will be activated. The Major Spill Response Team is described in Chevron's OSCP for State Leases.

Immediate response to an oil spill will depend on the specific circumstances associated with the spill. In all cases, the safety of the response team will have the highest priority.

Initial response for the project platforms is provided by the crew boat which is normally stationed at the Carpinteria Pier. A containment boom is stored on the stern of the crewboat. Additional equipment and manpower can be provided by Clean Seas and other oil spill cooperatives, Chevron's El Segundo Refinery and other equipment sources. Inventories of onsite equipment are provided in Section 4.4.1. Additional equipment inventories are provided in Chevron's OSCP for State Leases.

4.2.1.1 Immediate Command and Control

Upon becoming aware of a spill, the Chevron Operations Supervisor or his representative will assume command of the spill response operations. This person will make sure that proper action is taken and see that appropriate government agencies are notified. Should the spill be a major spill or become uncontainable with immediately available equipment, then activation of the Major Spill Response Team, described in Chevron's OSCP for State Leases, may be appropriate.

4.2.1.2 Specific Strategies

The specific strategies taken to control, contain, and clean up a spill will vary with the type of oil spilled, the location, the amount, and various other factors. General guidelines for various types of spills are given in the following pages of this section. The Operations Supervisor or his representative should analyze the situation and exercise good judgment in formulating the best plan for the type of spill that occurs. Once oil is spilled on water, action should be taken immediately to control and contain the spill and to minimize environmental damage.

Table 4.2-1. General Response Strategy

First Response to a Spill
Anyone observing a spill should immediately contact the necessary qualified personnel to take emergency action to stop flow at the source safely. Examples of such action are: • Close block valves to stop leaks; • Stop pumps if a tank is being overfilled; • Stop fuel pumps and minimize leakage from fuel lines if a fueling leak occurs.
Preventing Fire and Explosion
Fire and explosion are always dangers during petroleum product spills. Although flammability varies dramatically with the spilled product and the circumstances of the spill, it is essential that all reasonable steps be taken, as soon as possible, to minimize the chance of accidental ignition of the spilled product(s). Examples of such steps are: • Extinguish open flames, such as welding torches, immediately. • Cease all operations involving arc welders, grinders, and other sources of sparks. • Cease all operations which vent oxygen or enriched oxygen mixtures (such as certain diving operations) as soon as feasible. • Shut off electric circuits that might create a fire hazard, if possible. Under some circumstances, even a simple switch or electric motor can cause a dangerous spark. Remember that fans, blowers, electric lights, and electric pumps all have switches and/or electric motors. • Extinguish smoking materials, where appropriate.
General Strategies
• Physical removal of the oil is the preferred action in almost all cases. However, from a practical standpoint, much of the oil spilled during a minor spill will be dispersed by wind and wave action. Effective physical removal will depend on relatively calm weather and water conditions, and the speed with which the oil slick can be contained. • Containment and recovery should only be attempted for crude oil, diesel fuel, lubricating oil, or fuel oils. Containment and recovery should not even be attempted on spills of volatile products such as gasoline. Liquefied petroleum gases (LPG or LNG products, obviously, cannot be contained at all, unless they occur inside a vessel or other structure. Volatile products will normally spread and evaporate quickly. Containing them merely reduces their evaporation rate and increases the hazard of fire or explosion. • Spills remaining in the confines of the platform and not reaching the water will be cleaned up using materials such as sorbent pads to pick up any spilled oil or fuel. Oil soaked absorbents and other contaminated debris will be disposed of at an approved onshore site listed in Section 9 - Procedures, of Chevron's OSCP for State Leases. Good housekeeping practices will be maintained on-board the platform to keep the decks clean of oil and other pollutants.

Table 4.2-2. Strategy for Minor Spills

Minor Spill Strategy
In the event of a minor oil spill the following general procedures will apply:
• Ensure personnel safety. • Stop the flow of the spill. • Begin containment and cleanup procedures. • Notify appropriate Chevron and government entities. Note: It is always better to over-respond.
Spills less than 5 barrels (210 U.S. gallons):
• All items listed above • Deploy containment and/or absorbent boom; use absorbent boom and pads and/or skimmer to pick up oil. • Deploy additional equipment and alert oil spill co-op as necessary. • Maintain cleanup operations until no visible sheen is apparent.
Spills of 5 to 10 barrels (210 to 420 U.S. gallons):
• All items for spills less than 5 barrels. • Alert local oil spill co-op immediately. Call out appropriate cooperative and/or contractor equipment if it is apparent that "onsite" containment and pick-up equipment cannot handle the spill. • Assess wind and current direction to determine possible path of the spilled oil.

*See Sections 7 - Resources, and 9 - Procedures, of Chevron's OSCP for State Leases for specifics of the strategies described above.

4.3 ORGANIZATION OF IMMEDIATE RESPONSE TEAM

Chevron's OSCP for State Leases outlines two related response teams to make up the overall Oil Spill Response Organization. The first is the Immediate Response Team which is primarily composed of on-site Chevron, contract and/or Co-op personnel. The second team is the Major Spill Response Team which is composed of Chevron personnel who are based at various locations and under the overall direction of the Incident Commander during an emergency incident.

The Immediate Response Team is designed to make maximum use of the personnel and equipment onsite during platform removal operations. The team is structured to provide an immediate containment and control capability for minor spills. The team will also initiate control actions for large or uncontained spills regardless of their source.

The Major Spill Response Team's role is to provide assistance to the Immediate Response Team for large or uncontained spills which may require supplementary equipment or

manpower. In this case, the Major Spill Response Team will provide the necessary support in obtaining the additional resources required to contain and clean up the spill and will oversee the entire response operation. Refer to Chevron's OSCP for State Leases for Major Spill Response Strategies and equipment.

4.3.1 Immediate Response Team

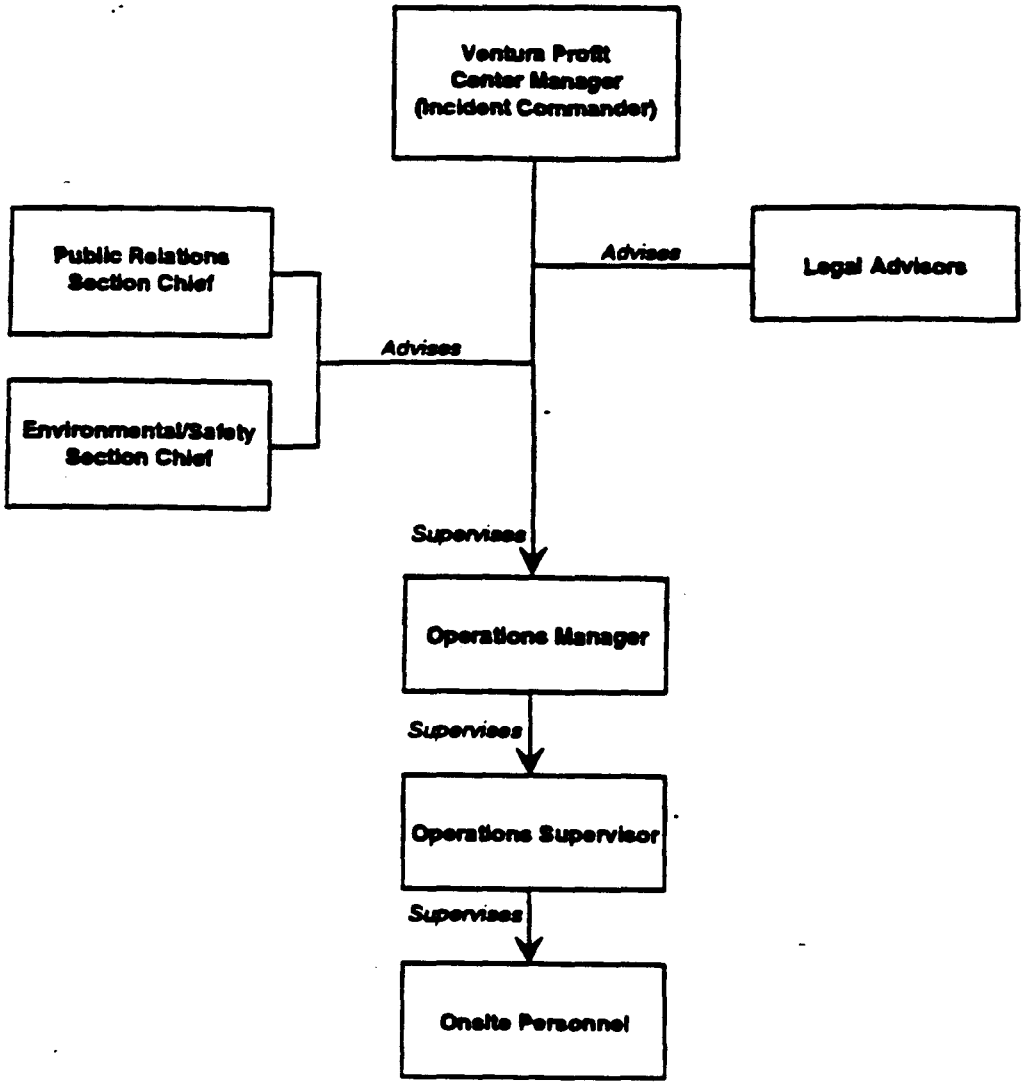
The Immediate Response Team will operate under the direct supervision of the Operations Supervisor, with overall supervision provided by the Incident Commander via telephone or radio communications. This team will respond immediately to any spill which may occur. The Immediate Response Team will utilize oil spill response equipment from crewboats and/or other support vessels. If this equipment is not adequate to contain the spill, the Clean Seas cooperative will be contacted immediately. Upon discovery of an oil spill or the initiation of an equipment deployment drill, the Immediate Response Team should have on-site response equipment deployed and operating within 1 to 2 hours. The organizational structure of the Immediate Response Team is shown in Figure 4.3-1.

Organizations prepared for response to oil spills must be capable of fulfilling responsibilities and requirements established by federal, state, and local laws and regulations. In addition to meeting the specific requirements established by law, Chevron policy is to respond with the best of its available resources and capabilities to prevent or minimize any damage that could result from spilled oil.

4.4 AVAILABLE OIL RESPONSE EQUIPMENT (RESOURCES)

4.4.1 Onsite and Locally Available Equipment

The equipment presented in Table 4.4-1 has historically been maintained on the project platforms. In efforts to retain the same level of spill response during abandonment operations, this equipment will be transferred to onsite support vessels during the platform removal project. In addition, per State Lands Commission Requirement, a minimum of 400 feet of sorbent boom, 5 bales of sorbent pads, and a small motorized boat will be maintained on one of the vessels in the immediate work area throughout the platform removal and pipeline abandonment phases of the project.



IMMEDIATE RESPONSE TEAM

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FIGURE 4.3-1

Table 4.4-1 Oil Spill Response Equipment Maintained on Project Platforms

Platform Hazel • 360' absorbent boom. • 5 bags absorbent pads (100 pads/bag). • 240' Kepner boom (or equiv.). **Platform Hilda** • 240' Conwed sorbent boom (or equivalent) • 300' Kepner boom (or equivalent) • 5 bags absorbent pads (100 pads/bag). • Oil Skimmer Equipment:* Acme Floating Skimmer, Model 51T Flex hose Inflatable buoy Anchor buoy and line Air Compressor Wilden pump 1200 gallon Kepner Sea container (or equivalent	**Platform Heidi** • 200' absorbent boom. • 6 bags absorbent pads (100 pads/bag). **Platform Hope** • 200' absorbent boom • 5 bags absorbent pads (100 pads/bag). • 150' Kepner boom (or equivalent). • Oil Skimmer Equipment:* Acme Floating Skimmer, Model 51T Flex hose Inflatable buoy Anchor buoy and line Air Compressor Wilden pump 1200 gallon Kemper Sea container (or equivalent) **Crewboat** • 750' Expandi boom with Rotopak (or equivalent)

* Note: Under special circumstances such as drilling and abandonment operations, upon approval of appropriate regulatory agencies, skimming equipment may be transferred from one platform to another.

4.4.2 Clean Seas Equipment

If an oil spill occurs that exceeds the capacity of on-site personnel and equipment, Chevron will request assistance from Clean Seas. Clean Seas is an oil spill cooperative of which Chevron is a member whose operating area includes both the Santa Maria Basin and the Santa Barbara Channel. Major equipment owned by Clean Seas, along with storage locations, are given in this section. Procedures required for activating this equipment are given in Section 9.0 - Procedures, of Chevron's OSCP for State Leases. Due to equipment upgrades, replacements, etc., these inventories are subject to change. Table 4.4-2 provides a partial inventory of Clean Seas equipment contained in storage vans at the Carpinteria facility.

Table 4.4-2. Inventory of Clean Seas Equipment and Materials Effective February 2, 1992

	Quantity	Size
OSRV *Mr. Clean II*		
Offshore Device Advancing Skimmer	2	750 gpm
Expandi 70" Boom	1	1,500 feet
Expandi 43" Boom	1	1,500 feet
Goodyear 12"x14" Boom	1	1,485 feet
Walosep W-4 Skimmer or GT260 or 135 Skimmer	1	90 bbls
15-ton Crane	1	15 foot
Oil or Water Separation Tank	1	200 gal
Skiff	1	–
Dispersant Application System	1	–
Integral Oil Storage Capacity		1,800 bbls
Absorbent Boom	10 bags	–
Absorbent Pads	10 bags	–

Van No. 05 Carpinteria Clean Seas Yard	Van No. 07 Carpinteria Clean Seas Yard
1500' of Super Max Boom Sorbents 13 bales Booms 12 bags Sheets 4 Anchors Shovels Misc. tow lines Buoys Bags for sandbags	1600' of 43" Expandi Boom 660" of 30" Expandi Boom Sorbents 5 bales Booms 14 bags Sheets 5 Sweeps 1 box Bags 20 boxes Blankets 1 box Oil Snare 4 Anchors with misc. anchor & crown lines, buoys Misc. tow lines & buoy lines Misc. tools Life jackets

Table 4.4-2. (Cont'd)

Van No. 09 Carpinteria Clean Seas Yard	Van No. 10 Carpinteria Clean Seas Yard
1520' of Sorbent Boom Sorbents 75 bags Sheets 5 Sweeps 100 boxes Oil Snare Anchors with misc. anchor & crown lines, buoys Misc. tow lines & buoy lines on reels Misc. buoys 55 gal drums	440' of 14" x 24" Goodyear Boom Sorbents 5 bales Booms 10 bales Sheets 3 boxes Bags 2 boxes Oil Snare 2 - 5,000 gal floating storage bags Anchors with misc. anchor & crown lines, buoys Misc. tow lines & buoy lines on reels 55 gal drums Misc. tools Life jackets
Van No. 11 Carpinteria Clean Seas Yard	**Van No. 12 Carpinteria Clean Seas Yard**
800' of 16" Kepner Boom Sorbents 2 bales Booms 11 bales Sheets 1 box Bags 15 Blankets 1 Anchor 75' of 3/4" tow line 2 - 55 gal drums	2 - 14 hp compressors 2 - 2" pumps 2 M15 pumps 2 Marlow pumps 1 gas driven generator Misc. hose floats Blinking lights Life jackets

This list is not intended to correspond to temporary relocation and/or movement of equipment nor to periods when equipment is out of service for repairs or maintenance.

4.5 OFFSHORE SPILL SCENARIOS AND RESPONSE PROCEDURES

4.5.1 Offshore Spill Scenario - Minor Spill

An offshore oil release during the abandonment procedures would most likely be associated with a fuel transfer spill, with pipeline flushing operations, or during separation of the pipelines from the platforms. Potential spill locations would be in the operational areas of the derrick barge and/or near the platforms. In the event of a release of oil or contaminated water, the following procedures will be implemented utilizing the onsite equipment listed in Table 4.4-1.

Table 4.5-1. Response Procedures - Minor Spill

Responsible Person	Action
Onsite Personnel	1. As soon as possible, onsite personnel shall notify the Operations Supervisor and provide him with information on: - the source of the spill; - the type of product spilled; - the status of control operations. 2. Onsite personnel shall immediately conduct containment control operations: - shut down transfer pumps; - close all flow valves; - turn off all sources of ignition; - deploy Conwed sorbent boom. 3. At direction of the Operations Supervisor, onsite personnel shall deploy appropriate equipment and carry out response and recovery operations. - Oil sorbent materials and any other oily debris recovered during response operations shall be stored in suitable containers or plastic bags. - Oil sorbent materials shall be disposed of at a state approved disposal site. 4. Maintain source and oil slick surveillance.
Operations Supervisor	In the event of a minor offshore oil spill during abandonment procedures, the Operations Supervisor shall: 1. Account for all personnel and ensure their safety. 2. Determine whether there is a threat of fire or explosion. 3. If a threat of fire or explosion exists, suspend control and/or response operations as appropriate until the threat is eliminated. 4. Assess the spill situation: - determine the source of the spill; - determine the status of response operations; - estimate spill volume; - estimate speed and direction of the slick's movement; - determine whether onsite containment and recovery equipment is sufficient to respond to the oil spill situation successfully and completely. 5. Notify Operations Manager, Mr. G.W. Gray Work phone: (805) 658-4630 Home phone: (805) 659-1737 Mobile phone: (805) 340-1853 Pager: (805) 531-4621

Table 4.5-1. (Cont'd)

Responsible Person	Action
Operations Supervisor	6. Notify appropriate government agencies (see appendix D for a complete list of appropriate agencies and interest groups). - California Office of Emergency Services Warning Officer 800-852-7550 (24-hour) - U.S. Coast Guard National Response Center 800-424-8802 (24-hour) - U.S. Coast Guard Marine Safety Office (Los Angeles/Long Beach) Commanding Office 213-499-5555 (24-hour) (Santa Barbara Office) 805-962-7430 - State Lands Commission 310-590-5201 (24-hour) 7. Supervise response, cleanup and storage operations. 8. Complete response, cleanup and storage operations. 9. File written reports with appropriate government agencies through Profit Center environmental staff.
Operations Manager	1. Notify Chevron's Incident Commander, Mr. A. Cornelius. Work Phone: (805) 658-4444 Home Phone: (805) 733-0220 Mobile Phone: (805) 689-7275 Pager: (805) 531-4606 2. Decide on Chevron Major Spill Response Team mobilization. 3. Assess the spill situation and request additional Chevron personnel, if required. 4. Maintain overall supervision of Immediate Response Team.

4.5.2 Offshore Spill Scenario - Major Spill

The potential for a major spill during platform removal is considered to be remote due to the precautionary measures taken as part of the abandonment procedures. However, should an oil spill occur that exceeds the capacity of the available equipment and personnel discussed herein, the procedures outlined in Chevon's OSCP for State Leases will be followed.

5.0. DESCRIPTION OF ENVIRONMENTAL SETTING AND DISCUSSION OF ENVIRONMENTAL IMPACTS FOR CHEVRON STATE WATER PLATFORM ABANDONMENTS (HEIDI, HOPE, HAZEL, HILDA)

5.1 ENVIRONMENTAL SETTING AND PROJECT IMPACTS

The following paragraphs discuss the existing regional and local environmental conditions encountered in the vicinity of platforms Heidi, Hope, Hazel, and Hilda, and their associated pipelines. Platforms Hazel and Hilda are located approximately 1.5 nautical miles (nm) from the Summerland coast in 96 feet (29 m) of water. Platforms Hope and Heidi are located 3 miles to the southeast of Hazel, directly off the coast of Carpinteria. Platforms Hope and Heidi are located approximately 2.6 and 2.5 nm from shore, respectively, in 132 ft (40 m) water depth.

Environmental issue areas contained within this document are generally discussed in both regional and platform-specific levels of detail, as well as offshore and onshore components.

A. Earth

Geology

Regional and local geologic conditions described in this section were compiled primarily from the DEIR for Exploratory Drilling Operations Proposed by Chevron U.S.A. Inc. for State Oil and Gas Leases PRC 2199, 3150, and 3184 (CSA, 1985); and the FEIR/EA for the BEACON Beach Nourishment Demonstration Project (Chambers, 1992).

Physiography

The geology of California's coastline can be characterized as dynamic and rapidly changing compared to most of the North American continent and in terms of the geologic time scale. This dynamic character is reflected in the rugged topography of California's coastal ranges and in the frequent earthquakes caused by crustal rock adjustments to changing stresses (Arthur D. Little, Inc., 1984).

Physiography of the Santa Barbara Channel includes the Western Transverse Ranges, the Santa Barbara Basin, the Channel Islands Platform (thought to be the westernmost portion of the Transverse Ranges physiographic province), and the Southern California Mainland

Shelf. The Transverse Ranges represent a unique feature in California coastal geology because of the predominantly east-west trend orientation relative to the underlying structure. The Coastal Ranges to the north and Peninsular Ranges to the south show northwest trending structure that is characteristic for most of California (Science Applications, Inc., 1984).

Mass Sediment Movements

Sediments in the Santa Barbara Channel area that are granular in nature may be prone to liquefaction (Dames and Moore, 1983; McClelland Engineers, Inc., 1983a,b; Nekton, Inc., 1984a). Seafloor instability triggered by seismic, oceanic, or gravitational forcing is recognized as a primary hazard in locating pipelines and platforms (McCulloch, et al., 1980; Richmond, et al., 1981), but is not considered a significant hazard to platform abandonment activities (Dames and Moore, 1983).

Mass movement of sediments is a common naturally occurring phenomenon along the Southern California continental borderland. These movements may take the form of slow sediment transport such as sediment flow or creep, or of sudden mass movements such as slides, slumps, turbidity currents, or liquefaction (Burdick and Richmond, 1982). Areas with evidence of previous seafloor instability have a high potential for future activity. Areas without evidence of previous instability may also pose a hazard if conditions allowing instability exist (Arthur D. Little, Inc., 1984).

The potential for slope instabilities in the Santa Barbara Channel results from several factors. Beyond the shelf break, thick sequences of water-saturated Pleistocene and Holocene sediments have accumulated. Some of these slopes have gradients approaching 6 degrees, and in many places these shallow sediment accumulations contain considerable quantities of trapped gas that weakens the slope sediment shear strength. Although particular areas of slope instability can be identified from evidence of previous disturbance, the evidence is often subtle and inconclusive (Science Applications, Inc., 1984).

Intertidal Surface Geology

In the intertidal region of the project area between Fernald Point and Rincon Point, the relative percentage of intertidal substrate is approximately 5 percent rock, 20 percent boulder, and 75 percent sand. The relative percentages of each change with seasonal sand movement. Many rock and boulder beaches are covered with sand in summer and exposed to rock during winter storms (Chambers, 1992).

Offshore and Onshore Local Geologic Conditions

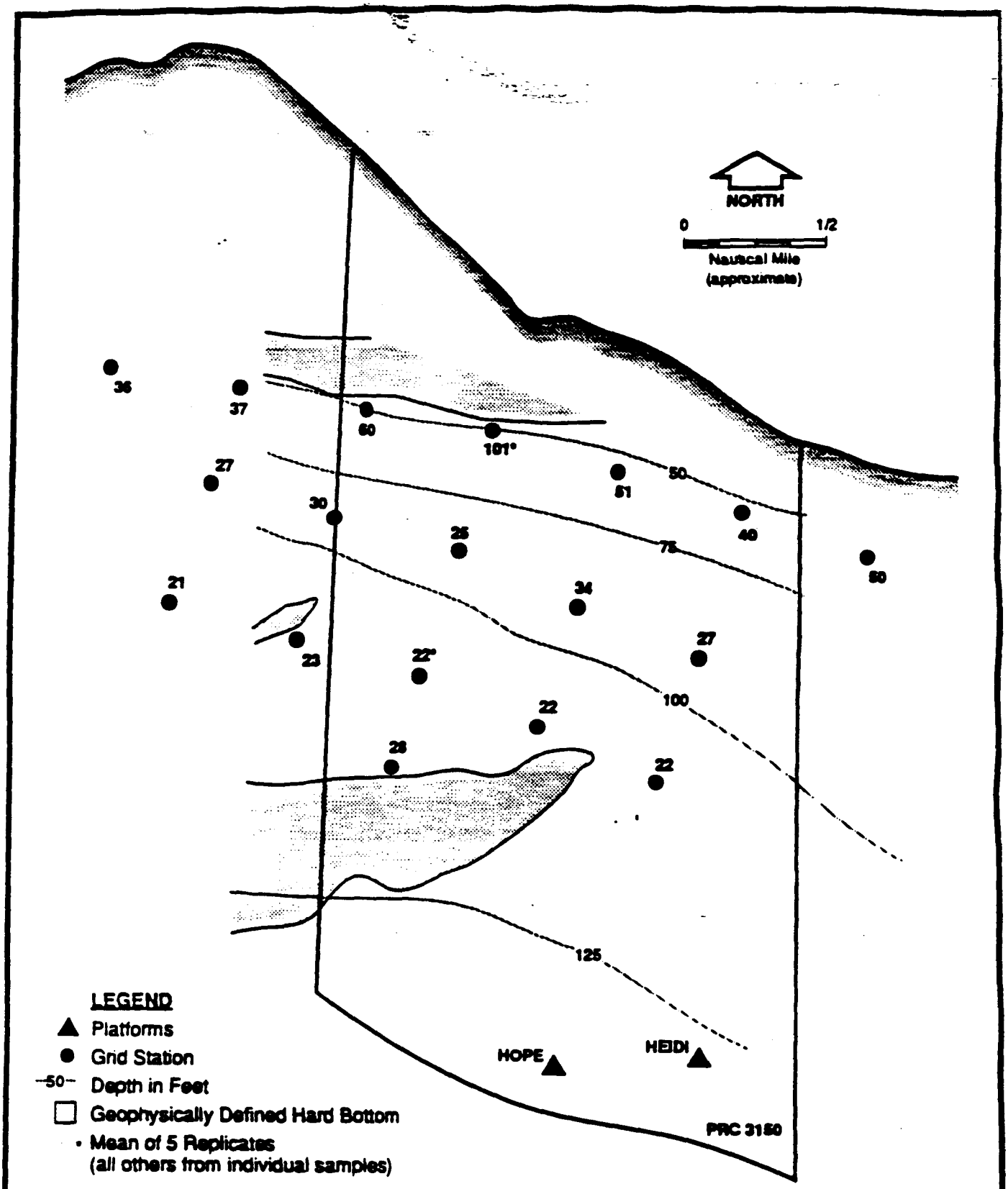
Heidi and Hope

- Bathymetry. In the lease area containing Heidi and Hope (PRC 3150), the seafloor slopes in a generally southwestwardly direction at approximately 0.7 degrees on the northern side and about 0.3 degrees on the southern side. The seafloor is generally smooth and featureless except for sedimentary rock outcrops in the southern and west-central portions. Relief at these locations ranges from 0.3 to 1.5 m (1 to 5 ft) (McClelland Engineers, Inc., 1983a,b).

  Surficial sediments collected during the biological surveys for previous studies in and near PRC 3150 were analyzed for grain size. Figure 1.1.1-1 shows the mean sediment grain size at each of the stations. Mean grain size ranged from 21 to 101 μm and decreased with increasing water depth and distance from shore. Figure 1.1.1-2 shows the spatial distribution of percent sand in the surficial sediments. Nearshore sediments generally contained 40 to 80 percent sand, whereas those farther offshore contained less than 10 percent sand. Silt content ranged from 15.5 to 80.6 percent; nearshore sediments were generally 15 to 50 percent silt, and offshore sediments 70 to 80 percent silt. Clay content ranged from 2.2 to 16 percent, and the values followed a similar nearshore/offshore pattern (CSA, 1985).

- Stratigraphy. Sedimentary rock strata, probably of Tertiary age, underlie Hope and Heidi. These rocks outcrop in the southern and west-central portions of the lease tract. An upper sediment unit overlies the older sedimentary rocks and varies in thickness from zero in the vicinity of the outcrops to a maximum depth of 20 m (65 ft) in the southeastern portion of tract PRC 3150. This sedimentary unit occurs in three east-west trending, shallow, trough-like basins which are separated by seafloor outcrops or sub-seafloor ridges of sedimentary rock strata. Sediment thickness is 11 m (35 ft) in the northeasternmost basin, 12 m (40 ft) in the central basin, and 20 m (65 ft) in the southern basin. Over the top of the sub-seafloor ridges dividing the basins, sediment thickness is generally less than 3 m (10 ft) (McClelland Engineers, Inc., 1983a).

- Structure. Underlying Hope and Heidi in PRC 3150, the shallow structural geology is characterized by generally flat-lying sediment that unconformably overlies older faulted and folded sedimentary rock strata (Figure 1.1.1-3). Upper sedimentary layers seem to be undeformed and unfaulted. An angular unconformity assumed to be an ancient erosional surface separates the upper sedimentary unit from the older-rock strata. In



MEAN GRAIN SIZE (μm) OF SURFICIAL SEDIMENTS FROM LEASE PRC 3150 AND VICINITY

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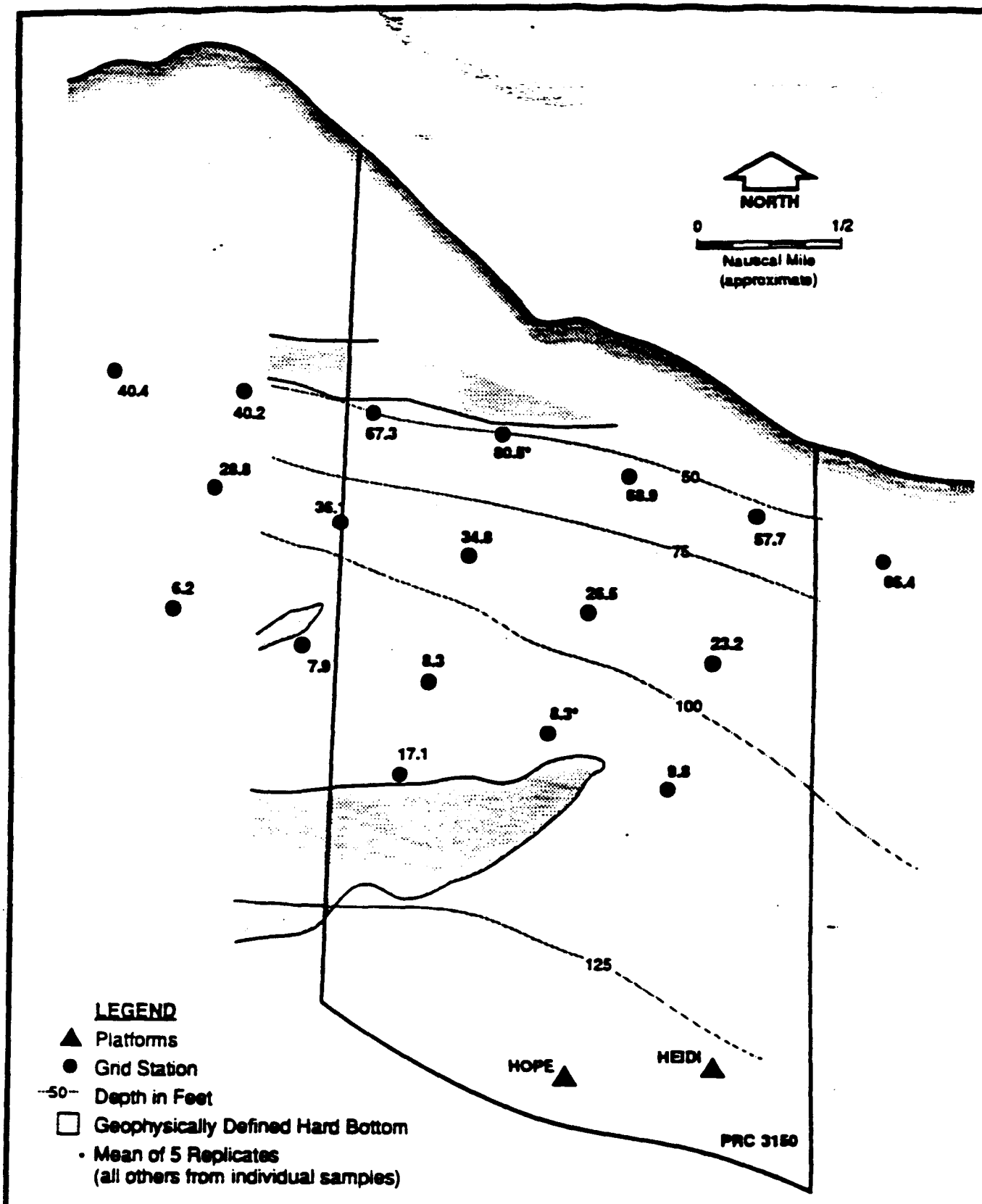
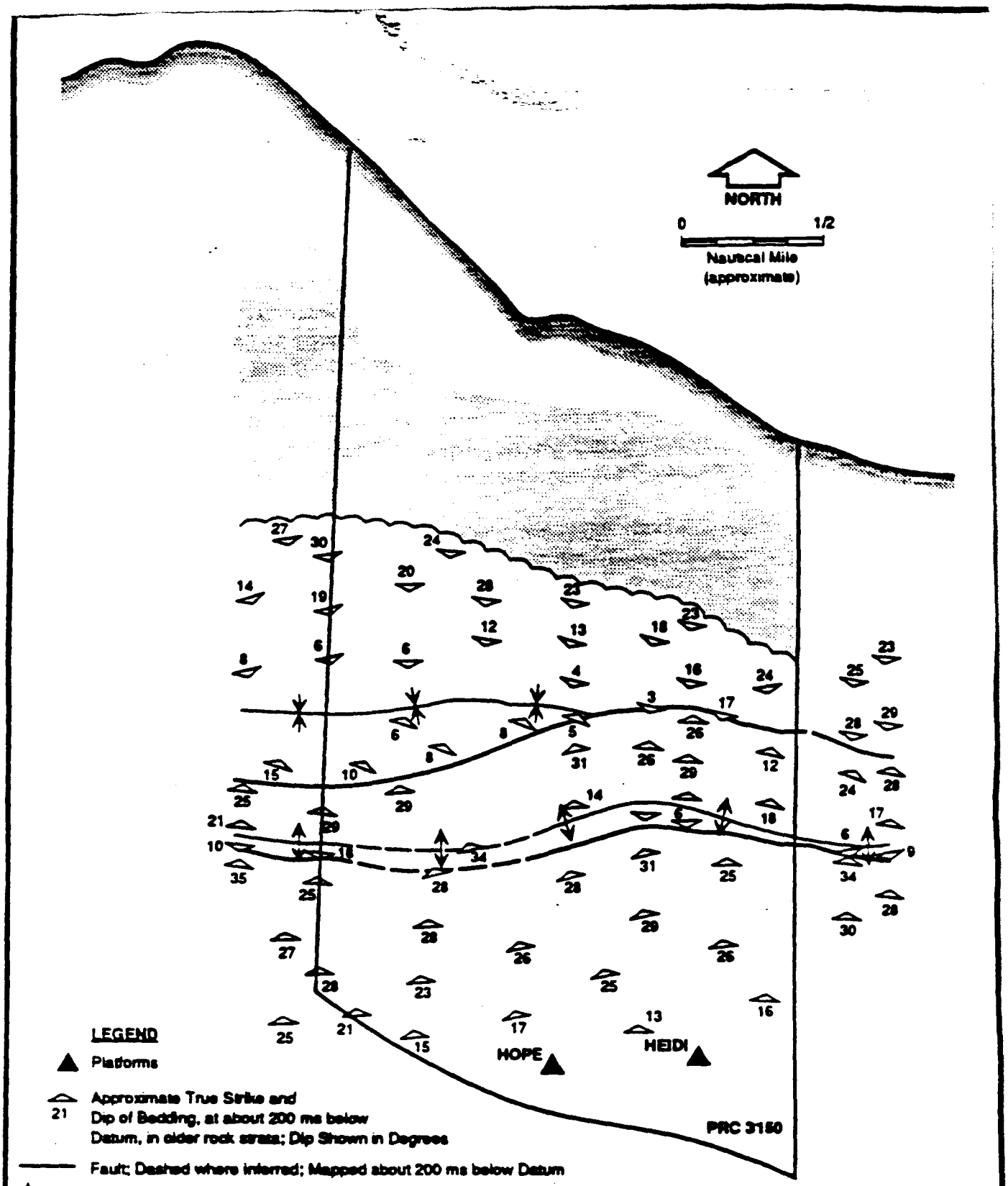
FIGURE 1.1.1-1



PERCENT SAND (DRY WEIGHT BASIS) IN SURFICIAL SEDIMENTS FROM LEASE PRC 3150 AND VICINITY

FIGURE 1.1.1-2



STRUCTURE MAP OF LEASE PRC 3150
(Adapted from: McClelland Engineers, Inc., 1983a)

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FIGURE 1.1.1-3

places, these older rocks are highly faulted and folded. Structural features trend east-west, conforming to the general structural pattern of the Transverse Ranges (CSA, 1985).

Two possibly intersecting faults occur in the lease area containing Hope and Heidi. The southernmost of these faults dips northward while its northern counterpart dips southward, suggesting an intersection at some depth (Figure 1.1.1-3). These faults are exposed only at the rock outcrops. They are covered in the areas where sediment buries the older rocks, suggesting that these faults are inactive. Luyendyk, et al. (1982) suggest that these faults may be associated with the Rincon Creek Fault. Both faults seem to cut only the older rock strata and do not appear to displace the seafloor (McClelland Engineers, Inc., 1983a).

- Seafloor Conditions Below the Platforms. Site specific information regarding the seafloor conditions beneath Hope and Heidi have not been obtained. However, the discussion of the seafloor conditions below Hazel and Hilda provide an approximation of the conditions potentially encountered at Hope and Heidi.

Hazel and Hilda

Site-specific information for the bathymetric, stratigraphic, and structural conditions of Hazel and Hilda at the level of detail provided above is not presently available. However, Simpson (1977) indicates that the ocean area in which platforms Hilda and Hazel are located is characterized by a flat, soft mud seafloor containing few rocks. A natural reef is located inshore of the platforms, northeast of Hazel.

- Seafloor Conditions Below the Platforms. Ayers, et al. (1980a) showed that over 90 percent of discharged drilling-fluid solids settle directly to the bottom, beneath the platform. The distance from the well site and settlement time are primarily a function of current and water depth. As discussed in Section 1.3, Coastal Processes and Water Quality, current speed in the Santa Barbara Channel does not usually exceed 10 cm/sec. Current data obtained in the vicinity of Hazel and Hilda indicate that north to northwest is the predominant direction of the flow of currents. While the precise dispersion radius of mud and cuttings on the seafloor below the platforms under study are not known, previous studies conducted underneath Hazel and Hilda indicate substantial piles at the base of the structures. According to Carlisle, et al., 1964, drill cuttings formed an irregularly shaped pile that reached 25 feet in height and 250 feet in diameter when the initial drilling was completed.

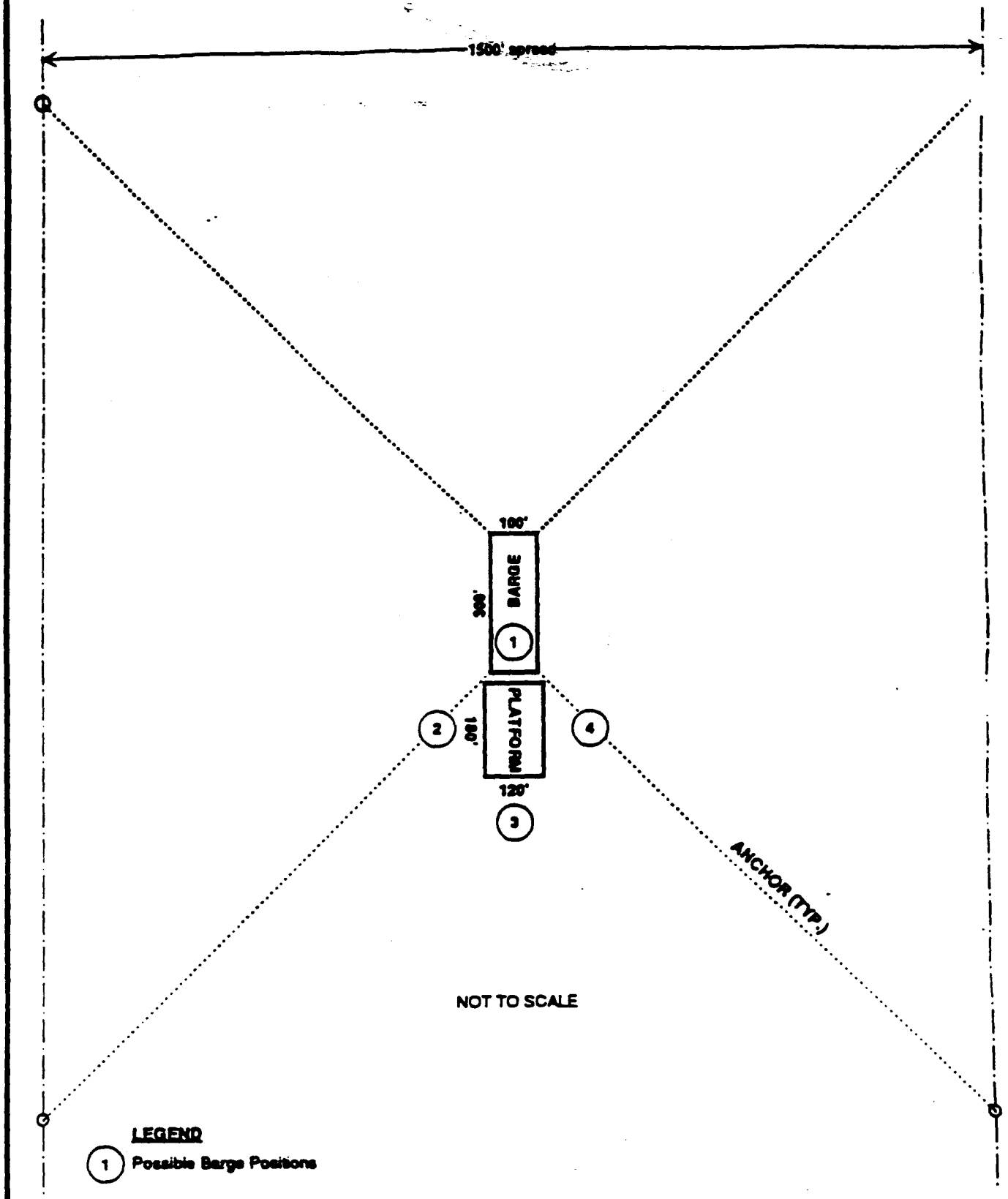
According to a more recent survey conducted in 1976 at platform Hilda, depth readings were taken every 10 feet with an oil-filled depth gauge during high tide. The divers found that the cuttings pile was skewed to the west, reaching a maximum height of 38 feet near the western face of the platform, in the area of the conductors (Simpson, 1977). As the conductors provided the densest area of attachment places for invertebrates on the platform, the study speculates that the pile may have been highest at that location due to the addition of mussel clumps that had torn loose in storm or had fallen from the pipes of their own weight. Carlisle's study indicated that the cuttings pile (without shells at the time), reached a maximum height of 25 feet. The 1976 data suggest that the layer of shells had increased to as deep as 15 feet in some places.

- Nearshore Substrate at Pipeline Landfall. Nearshore substrate at this location is probably Tertiary Age folded and faulted sedimentary rock strata. This is typically overlain by generally flat-lying sediment. The upper sedimentary layers seem to be undeformed and unfaulted (CSA, 1985).

Offshore Impacts

Geologic impacts from the proposed abandonment operations will be localized and short term in nature. Seafloor topography surrounding all platforms and along the pipeline corridors is relatively flat. Vibrations from project removal operations will not induce sediment slides or any other changes to the geologic environment. During derrick and materials barge anchor placement, there will be some localized bottom scarring, and short-term sediment disturbance and redistribution. However, seabottom scarring will be minimized by following the anchor-laying operations described below.

Typical anchor spreads for materials and derrick barges are 2,000 to 3,000 feet (Figure 1.1.2-1). Each anchor weighs approximately 12 tons and is connected to the barge by 1.5-inch-diameter cable onboard the barge. Each anchor typically occupies approximately 70 square feet and is wound on a winch-driven drum. Anchors are vertically placed on the bottom by anchor handling vessels. The barge is then pulled into the required position by winching against the placed anchors. Anchors are picked up by the tending vessel by lifting the anchor vertically with a pendant line. An anchor will bury itself when the required tension is achieved to resist the pulling forces of the barge. Anchors are not dragged on the bottom, but will create a disturbance while they are digging in. Anchor disturbances are generally limited to 16 to 165 feet in length (Centaur, 1984). A correctly placed anchor typically results in a disturbance of about 35 feet. Part of the cable length will also lie on the bottom and cause a minor amount of bottom disturbance. On the



TYPICAL PLATFORM REMOVAL
BARGE MOORING SPREAD

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FIGURE 1.1.2-1

average, about 150 feet of cable per anchor comes into contact with the bottom and disturbs a swath of about 2 feet; therefore, each anchor and its cable generally disturbs about 300 square feet per anchor position. The procedure of vertically lowering and lifting the anchor greatly reduces bottom scarring which usually occurs when anchors are dragged during conventional setting methods.

Jacket Removal: Hope, Heidi, and Hilda

Platforms Hope, Heidi, and Hilda all have similar configurations with two large caisson legs and two smaller, 54-inch-diameter legs with a caisson base. The piles driven through the caisson legs and caisson bases, and the well conductors that are inside the piles will be severed through the use of explosives. Approximately 25 to 45 pounds of explosives will be used per charge, with between 32 and 40 cuts per platform. Charges will be detonated over a 4- to 5-day period per platform. Upon severance, the caisson legs and caisson bases will be physically lifted from the seafloor, leaving shallow depressions in the seafloor.

Impacts to earth resources will result from both the explosives detonations and from subsequent removal of the severed conductors and pile legs. Explosive charges may result in some localized seafloor impacts; however, cuttings mounds accumulated at the base of the platforms will likely remain largely intact.

In order to avoid further bottom disruption to the seafloor after leg and caisson removal, depressions will not be backfilled. Over time, slumping, slides, and local current action will serve to naturally backfill these holes with sediment. Overall bottom topography near the former platform areas will remain as low-lying mounds. Therefore, impacts to earth resources associated with the jacket removal of platforms Hope, Heidi, and Hilda will be localized, short term, and less than significant.

Jacket Removal: Hazel

The existing bottom at the platform is now above the top of the caisson bases. To avoid extensive disturbance to the seafloor, the caisson bases and buried horizontal members will be abandoned in place. The 36-inch-diameter legs will be removed down to the top of the caisson base or at least one foot below the existing mudline. The grouted caisson bases, the bottom horizontal elevation, and some vertical diagonal braces will remain in place. Removal of the vertical platform structure will result in the creation of shallow holes. In order to avoid further platform disruption, these holes will not be backfilled, as local current action will aid in the natural backfilling process. This action will serve to reduce

impacts to earth resources from platform structure removal to levels of insignificance. These currents have not proved strong enough over the life of the platform, however, to remove the sediments accumulated around the base of the platform, so it is unlikely that the buried structural componants will be exposed over time. As discussed in a previous section, anchor scarring will be minimal due to the use of fly anchors. Therefore, overall impacts to geologic resources from the jacket removal of platform Hazel will be localized, short term, and less than significant.

Offshore Pipeline and Power Cable Abandonment

All pipelines to be abandoned will be flushed, pigged, and capped. The pipelines will be separated from the platform, capped, and the ends will be jetted down below the mudline. The pipeline pull sleds originally used to pull the pipelines to the platforms will be cut free of the pipelines with an oxy-arc torch and recovered. Some excavation will be required to free the sleds, leaving a trench for burial of the pipeline ends. The pipeline ends will be jetted down one foot below mudline using a high volume diver held hand jet. No backfilling will be required. Rather, the trenches will be left to gradually fill in through natural current processes. Surveillance of local bottom composition maps indicate that there are no rocky outcrop features that would interfere with pipeline abandonment operations.

The power cables will be cut at the platforms and the ends will be jetted down at th platform. Where it enters the mudline, the power cable will be excavated and cut with an oxy-arc torch or a mechanical cutter. Excavation will result in temporary displacement and disruption of localized regions of the seafloor. These operations will not result in any permanent changes in topography or subsea relief features.

In efforts to clean extraneous objects from the seafloor surrounding the platforms a debris recovery program will be undertaken by Chevron after the final heavy lifts have been made. The debris recovery will be performed over a 1,000-foot radius from the platform. The integration of this procedure will reduce abandonment impacts to the benthic environment to less than significant levels.

Onshore Impacts

Nearshore Pipeline and Power Cable Abandonment

The nearshore segment of the pipelines and power cables will be abandoned in place. Abandonment operations will entail flushing, pigging, grouting, and capping of all lines.

The pipelines will be flushed with seawater from the offshore platforms to remove any hydrocarbons. The seawater will be treated at the Carpinteria Plant and discharged in accordance with the plant's existing NPDES permit. Class "G" oilfield cement will be pumped into the lines from the plant to approximately 800 feet offshore, beyond the surf zone in the 5-m (15-foot) depth contour. Grouting to this distance will ensure that the lines are adequately weighted, thereby preventing any movement resulting from dynamic nearshore processes. Abandonment of all offshore lines in place will also ensure minimal disruption of bottom contours and sediments. Therefore, nearshore pipeline abandonment activities will not impact any earth processes.

1. Earth Conditions

   Offshore - Due to their short-term, temporary nature, none of the offshore operations, including derrick and materials barge anchor placement, platform jacket removal, and offshore pipeline and power cable abandonment will create any significant new impacts to existing earth conditions or geological substructures.

   Onshore - None of the nearshore pipeline and power cable abandonment operations such as: flushing, pigging, grouting and capping of all lines will result in significant impacts to any earth conditions or geological substructures.

2. Compaction, Overcovering of Soil

   Offshore - A limited amount of seafloor material will be disrupted during anchor placement for materials and derrick barges. Some seafloor disturbance will also occur as a result of explosive detonation during the jacket removal phase for Platforms Hope, Heidi, and Hilda. Excavation of pipeline and power cable ends near their connections with the platforms will result in temporary displacement and disruption of localized regions of the seafloor. As indicated in Offshore Impacts above, local current action will aid in the natural backfilling process. None of these impacts will be long-term or result in any permanent disruption, displacement, compaction, or overcovering of offshore soil.

   Onshore - Abandonment of all offshore lines in place will ensure that there will be no disruptions, displacements, compaction, or overcovering of soil in the nearshore/onshore region.

3. Topography

This project, both onshore and offshore, is temporary in nature and will not create any permanent changes in topography, nor will this project create any new significant permanent impacts to ground surface relief.

4. Unique Features

The geology in the project area consists of generally flat-lying sediment that uncomfortably overlies older faulted and folded sedimentary rock strata. The removal and abandonment of the oil production platforms and associated pipelines will not create any new permanent significant environmental effects either offshore or onshore.

5. Erosion

Offshore - Any bottom disruption that may be created on the seafloor by project operations will be naturally restored over time by natural current action. Therefore, no significant erosive impacts are expected.

Onshore - As all onshore and nearshore components of the project will be abandoned in place, there will be no physical disturbances that would result in any erosion. Therefore, no erosional impacts will be associated with these portions of the project.

6. Siltation

Offshore - Localized offshore bottom scarring resulting from project operations will create short-term sediment disturbance and redistribution. However, all scarring is expected to silt in naturally with the aid of ocean currents thus restoring the site to its natural state. Thus, this project is not expected to create any permanent significant impacts to the ocean floor affecting natural siltation.

Onshore - As all onshore and nearshore components of the project will be abandoned in place, there will be no physical disturbances that would result in any changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion. Therefore, no siltational impacts will be associated with the onshore/nearshore portions of the project.

7. Geologic Hazards

The proposed project is within a seismically active area. However, the removal and abandonment of offshore and onshore oil production facilities will not create any new significant geological hazards.

B. Air

Atmospheric Environment

Meteorology

Local and regional meteorological patterns have a primary influence on air quality conditions in Santa Barbara County. These patterns determine the transport and dispersion of pollutants and influence the formation of secondary pollutants such as ozone and aerosols. Meteorological conditions may also indirectly affect response procedures in the case of an accident during the abandonment process.

The factor most responsible for annual weather patterns in the region is a semipermanent high pressure cell centered in the Eastern Pacific Ocean (Reeves et al., 1981). In late spring to early fall, the high deflects storms to the north resulting in dry weather, stable atmosphere, and strong inversions. During winter, the high moves southward and weakens, allowing occasional frontal systems to pass the central coastal region. This movement increases the amount of rain and changes wind and inversion patterns.

Other influences on local weather include the coastal topography and the Pacific Ocean. Coastal topography affects temperature, precipitation, and wind flow. The Pacific Ocean minimizes temperature variations and produces strong sea breezes, especially in summer.

Temperature

Temperatures in the region are generally moderate with a small range of extremes. Offshore temperatures range from 10 to 18°C (50 to 65°F) year-round due to the moderating influence of the Pacific Ocean. Along the coast, maximum daily temperatures in July (representative of summer conditions) are in the 15 to 22°C (60 to 71°F) range. Minimum readings at this time average (13°C) 55°F. Temperatures for January (representative of winter conditions) include a daily average of about (11°C) 52°F with lows averaging (5°C) 42°F and highs in the 13 to 16°C (50 to 60°F) range.

Precipitation

Approximately 90 to 95 percent of the mean annual precipitation occurs between November and April. Coastal areas generally receive less than 50 cm (20 in.) of rainfall per year with the long-term annual average being on the order of 43 cm (17 in.). Offshore areas receive

less precipitation than onshore areas (Jacobs Engineering Group, 1981). Annual rainfall on the Channel Islands ranges from 19 cm (7.5 in.) at San Nicholas Island to an estimated 29 cm (11.5 in.) at San Miguel Island.

Air Pollution Control

Air pollution control is administered on three government levels in the State of California: federal, state, and local. The federal government has established ambient air quality standards to protect the public health and welfare. The State of California has established separate, more stringent standards. The Santa Barbara County Air Pollution Control District (APCD) is responsible for administering air pollution control programs within the County. The air quality of Santa Barbara County is monitored by the SBCAPCD and the California Air Resources Board (CARB).

Ambient Air Quality Standards (AAQS)

Ambient air quality standards are adopted pollutant thresholds considered safe, with an adequate margin of safety, to protect the public health and welfare. Concern is focused on those people most susceptible to further respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise; these people are collectively called "sensitive receptors." Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed. The federal and state standards currently in effect are shown in Table 1.2.1-1.

Table 1.2.1-1. Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[a]	National Standards[b]	
		Concentration[c]	Primary[d]	Secondary[e]
Ozone	1-hour	0.09 ppm (180 µg/m³)	0.12 ppm (235 µg/m³)	Same as Primary Standard
Carbon Monoxide	8-hour	9.0 ppm (10 mg/m³)	9 ppm (10 mg/m³)	Same as Primary Standard
	1-hour	20.0 ppm (23 mg/m³)	35 ppm (40 mg/m³)	Same as Primary Standard
Nitrogen Dioxide	Annual Average	---	100 µg/m³ (0.053 ppm)	Same as Primary Standard
	1-hour	0.25 ppm (470 µg/m³)	---	Same as Primary Standard
Sulfur Dioxide	Annual Average	---	80 µg/m³ (0.03 ppm)	---
	24-hour	0.05 ppm[f] (131 µg/m³)[f]	365 µg/m³ (0.14 ppm)	---
	3-hour	---	---	1,300 µg/m³ (0.5 ppm)
	1-hour	0.25 ppm (655 µg/m³)	---	---
Suspended Particulates Matter Less Than 10 Microns Diameter (PM_{10})	Annual Geometric Mean	30 µg/m³	---	---
	Annual Arithmetic Mean	---	50 µg/m³	Same as Primary Standard
	24-hour	50 µg/m³	150 µg/m³	Same as Primary Standard
Sulfates	24-hour	25 µg/m³	---	---
Lead	30-day Average	1.5 µg/m³	---	---
	Calendar Quarter	---	1.5 µg/m³	Same as Primary Standard
Hydrogen Sulfide	1-hour	0.03 ppm (42 µg/m³)	---	---
Vinyl Chloride (Chloroethene)	24-hour	0.010 ppm (26 µg/m³)	---	---
Visibility Reducing Particles	10 AM to 6 PM	In sufficient amount to give an extinction coefficient of 0.23 per kilometer when relative humidity is less than 70 percent.	---	---

[a] Californa standards for ozone, carbon monoxide, sulfur dioxide (1-hour), nitrogen dioxide, and particulate matter (PM_{10}) are values that are not to be exceeded. The sulfate, lead, hydrogen sulfide, vinyl chloride, and visibility-reducing particles standards are not to be equaled or exceeded.

[b] National standards, other than ozone and those based on annual averages or annual arithmetic means, are not to be exceeded more than once a year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than 1.

[c] Concentration expressed first in units which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 mm of mercury. All measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 mm of Hg (1,013.2 millibar); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas. µg/m³ = micrograms per cubic meter, mg/m³ = milligrams per cubic meter.

[d] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health. Each state must attain the primary standards no later than 3 years after that state's implementation plan is approved by the Environmental Protection Agency.

[e] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. Each state must attain the secondary standard within a "reasonable time" after the implementation plan is approved by the EPA.

[f] At locations where the state standards for ozone and/or suspended particulate matter are violated. National standards apply elsewhere.

[g] Prevailing visibility is defined as the greatest visibility which is attained or surpassed around at least half of the horizon circle, but not necessarily in contiguous sectors.

Source: Air Resources Board, 1990. *California Air Quality Data Summary.*

Baseline Air Quality

The air quality of the Santa Barbara area is monitored by the CARB, the APCD, and industry. Air quality monitoring stations operated by the CARB and the APCD are part of the State and Local Air Quality Monitoring System (SLAMS). The majority of the monitoring stations are operated by industry under protocols developed by the APCD as required by permit conditions to detect project-related impacts. These stations are referred to as Prevention of Significant Deterioration (PSD) stations.

The nearest ambient air quality monitoring station in proximity to the platform project areas are located within the cities of Carpinteria and Santa Barbara. The Carpinteria station is located approximately 2 miles north-northwest of the platform sites and the Santa Barbara station is located approximately 7 miles north of the project site. Data from the Carpinteria station is considered most representative of the ambient air quality of the project sites. However, the Carpinteria station currently does not monitor carbon monoxide (CO) or PM_{10} (particulate matter less than 10 microns); therefore, CO and PM_{10} data were taken from the Santa Barbara station.

Ozone and PM_{10} are of primary interest because monitored concentrations of these pollutants in southern Santa Barbara County occasionally exceed State air quality standards. The concentrations of ozone, PM_{10}, CO and NO_2 monitored in the project area from 1989 through 1991 are presented in Table 1.2.1-2. The air quality data indicates that State standards for both ozone and PM_{10} are occasionally exceeded but federal standards are rarely exceeded for ozone and never exceeded for PM_{10}. Exceedances of state or federal standards for carbon monoxide, nitrogen dioxide or sulfur dioxide did not occur in the project area during the period of 1989 through 1991.

Table 1.2.1-2. Air Quality Standard Exceedances

OZONE - Carpinteria (ppm)	1989	1990	1991
Worst Hour	0.10	0.13	0.12
Number of State Exceedances (Hours >0.09 ppm)	1	5	8
Number of Federal Exceedances (Hours >0.12 ppm)	0	1	0
CARBON MONOXIDE - Santa Barbara (ppm)			
Worst Hour	11.0	11.0	9.0
Number of State Exceedances (Hour >20 ppm)	0	0	0
Number of State Exceedances (8 hours >9 ppm)	0	0	0

Table 1.2.1-2 (Continued)

NITROGEN DIOXIDE - Carpinteria (ppm)			
Worst Hour	0.06	0.05	0.07
Number of State Exceedances (Hours >0.25 ppm)	0	0	0
PM_{10} - Santa Barbara (micrograms/cubic meter)			
Worst Sample	83	96	96
Number of State Exceedances (Samples >50)	10	4	8
Annual Geometric Mean (Standard is 30)	40.8	34.5	33.5
Annual Arithmetic Mean (Standard is 50)	42.9	36.9	36.6

Source: California Air Resources Board, Air Quality Summaries, 1989, 1990, 1991

Offshore and Onshore Impacts

Methodology and Significance Thresholds

Methodology and significance thresholds used in this impact analysis are consistent with the *Environmental Thresholds and Guidelines Manual* (Guidelines) (Santa Barbara County, 1990). Generally, emissions are calculated for each source and summed for the entire proposed project. The short-term (construction) and long-term emissions are individually compared to thresholds adopted by the APCD to determine significance.

The short-term threshold for ozone precursors (nitrogen oxides [NO_x]) and reactive organic compounds [ROC]) and PM_{10} is 2.5 tons per 3-month period. Best available control technology is required for sources emitting between 2.5 and 6 tons per 3-month period. Additional mitigation is required for sources emitting greater than 6 tons per 3-month period.

Equipment to be utilized for offshore abandonment and removal operations would generate short-term exhaust or combustion emissions. Emissions during abandonment and removal activities would be produced primarily by power-generating equipment, welding equipment, tug boats, utility vessels, crew boats, and derrick barges. Offshore equipment emissions were calculated using fuel-specific and diesel vessel emission factors from the Environmental Protection Agency (EPA) document, *Compilation of Air Pollutant Emission Factors* (AP-42, 1992 update), which is accepted and utilized by the Santa Barbara County APCD. Emission factors and general assumptions pertaining to project equipment numbers, usage factors, power ratings (i.e., horsepower), and fuel consumption are presented within Appendix B.

1. Emissions

Implementation of the proposed project would include the abandonment and removal of four oil and gas platforms. The primary emission-generating activities would consist of the mobilization of offshore equipment, pre-abandonment activities, pile and conductor cutting, topside removal, jacket removal, debris removal, site clearance verification, and pipeline abandonment. As currently proposed, the four project platforms would be abandoned and removed in pairs (i.e., Hope and Heidi, Hazel and Hilda). Project emissions have been estimated for each pair of platforms (Table 1.2.2-1) and the total project (Table 1.2.2-2). Since the mobilization and demobilization of equipment would occur once for all four platforms, emissions generated due to this activity have been added to the total project.

Emissions would be reduced by utilizing the following Santa Barbara County APCD standard measures which are included in the 1991 Air Quality Attainment Plan (AQAP) as control measures N-IC-7:

- Equipment shall be maintained as per manufacturer's specifications;
- Catalytic converters shall be installed on all gasoline-powered equipment (if applicable);
- The fuel injection timing shall be retarded on diesel-powered equipment by two (2) degrees from manufacturer's recommendations;
- Gasoline-powered equipment shall be substituted for diesel-powered equipment if feasible;
- Direct injection diesel engines (i.e., Caterpillar D399 or equivalent) shall be used if available;
- Turbocharged diesel engines with intercooling shall be used if available; and
- Reformulated diesel fuel and high pressure injectors shall be used in all diesel-powered removal and abandonment equipment.

The Santa Barbara County APCD guideline document (Scope and Content of Air Quality Sections in Environmental Documents, 1992) indicates that fuel injection retard,

high pressure injections and reformulated diesel fuel would reduce NO_x and ROC emissions of diesel-powered equipment by 40 percent and 15 percent, respectively. Direct injection diesel engines may emit up to 50 percent less NO_x.

Table 1.2.2-1. Emission Estimates - Per Pair of Platforms (i.e., Platforms Hope and Heidi; and Platforms Hazel and Hilda)

Operation	Emission - Total Tons		
	NO_x	ROC	PM_{10}
Pre-Abandonment	0.548	0.042	0.084
Pile and Conductor Cutter	2.158	0.262	0.204
Topside Removal	14.958	1.914	1.494
Jacket Removal	7.586	1.094	0.880
Transport to LB/LA	1.37	0.22	0.160
Debris Removal	0.594	0.102	0.072
Site Clearance Verification	1.062	0.080	0.112
Pipeline Abandonment	0.186	0.136	0.022
Total Tons	28.47	3.86	3.03
Santa Barbara APCD Threshold	25 tons/3 months	25 tons/3 months	25 tons/3 months

Table 1.2.2-2. Total Project Emission Estimates

Operation	Emission - Total Tons		
	NO_x	ROC	PM_{10}
Mobilization/Demobilization of Removal Equipment[a]	0.690	0.098	0.077
Abandonment and Removal - Platforms Hope and Heidi	28.47	3.86	3.03
Abandonment and Removal - Platforms Hazel and Heidi	28.47	3.86	3.03
Total Tons	57.622	7.808	6.130
Santa Barbara APCD Threshold	25 tons/3 months	25 tons/3 months	25 tons/3 months

[a] Mobilization/Demobilization requires one operation for all four platforms.

As indicated on Table 1.2.2-1, the abandonment and removal of Platforms Hope and Heidi would produce approximately 28.47 tons of NO_x, 3.86 tons of ROC, and 3.03

tons of PM_{10}. Abandonment and removal of Platforms Hazel and Hilda would produce the same amount of pollutants. Each pair of platforms to be abandoned and removed would require approximately 45 days to complete. Overall, implementation of the proposed project (Table 1.2.2-2) would contribute approximately 57.622 tons of NO_x, 7.808 tons of ROC and 6.130 tons of PM_{10} to the south central coast air basin. These emissions are covered by the existing SBAPCD permits for the four platforms, which expire early in 1997. While, based on the Santa Barbara APCD thresholds of 2.5 tons per quarter for NO_x, ROC, and PM_{10}, the project abandonment and removal would, within the confines of the time of operation, result in short-term air quality impacts. These emissions are less than those permitted by the SBAPCD on an annual basis until 1997 for all reactants. The values, in tons per year, for the four platforms in operation were 8.7 t/y for NOx, 203.37 t/y for ROC and 1.08 t/y for PM10. After the short-term impacts of the removal operation, there will be a return to zero emissions.

Emissions associated with the cutting up of platforms within the Long Beach/Los Angeles port have been addressed in environmental documentation required for permitting of these scrapping facilities, in accordance with guidelines set by the South Coast Air Quality Management District (SCAQMD).

While the short-term air quality impacts of the proposed project may be considered adverse, project emissions are below those permitted under Chevron's existing Santa Barbara County (1997) APCD permit.

2. Odors

During the operational period, diesel fumes will be noticeable within several hundred yards downwind of the emission source(s). These odors will be noticeable to the workers involved in project operations, but will be dispersed by the prevailing winds long before they would reach any sensitive onshore receptors. No long-term odors will be generated by either the offshore or the onshore portions of the project.

3. Climate

Upon completion, this project will not create any major changes in air movements, temperature, or climate, nor create any abnormal weather conditions.

C. Water

Coastal Processes and Water Quality

Santa Barbara Channel Circulation

The Santa Barbara Channel is a generally east-west oriented coastal region bounded to the north by the land mass extending from Point Conception to Port Hueneme and to the south by the Channel Islands (from east to west: Anacapa, Santa Cruz, Santa Rosa, and San Miguel). Transport into and out of the Santa Barbara Channel is primarily limited to the vertical sections extending from Anacapa Island to Port Hueneme on the eastern end of the Channel and from San Miguel Island to Point Conception on the western end.

Currents within the Santa Barbara Channel are extremely variable and complex, generally of low velocity (5 to 10 cm/sec) and highly dependent upon flow between basins to the north and south (Emery, 1960 in Texaco, 1987). They are the result of several types of phenomena, i.e., wind-driven circulation, density-driven circulation, tides, storm surges, and various types of waves (Newberger, 1982). Flow direction is dependent upon the driving current. Flow is toward the northwest during the Davidson Current period (winter) and southeast during the Southern California Countercurrent period (majority of the year). Flow velocities and directions are affected only slightly by tides.

Episodic currents occasionally affect the waters of the Southern California Bight, e.g., "El Niño," an episodic event of relatively long-term scale that results in abnormally warm water. These events last approximately one year, but occasionally terminate shortly after initiation. El Niño events have occurred most recently in 1957, 1965, 1972, 1976, and 1982-1983, 1985-1986, and 1992-1993.

Wind Driven Currents

Currents in the Santa Barbara Channel may be characterized as weak and variable (National Ocean Service, 1980). Circulation is wind-dominated with a weak easterly nontidal flow predominating during the spring and summer months whereas a westerly set persists in fall and winter. The nearshore tidal current along the north shore of the Channel generally ranges from 0.5 to 1 knot (Chambers, 1992).

Littoral Currents

Movement of littoral materials is in response to wave direction and the configuration of the coast. Waves approach the Santa Barbara Channel predominantly from the west-to-northwest, producing a southerly transport of littoral sands. Less frequent waves from the southeast cause occasional reversals in the direction of littoral transport. Sources of littoral materials include the streams entering the channel basin, eroded coastal rocks and sediment, and sands from coastal dunes (Little, 1985).

Santa Barbara Channel Tides

The tide in the Santa Barbara Channel is classified as a mixed semidiurnal type because there are normally two unequal high and two unequal low waters in a day. The tide enters the Channel through the eastern end, sweeps up the coast, and exits the western end. The peak time difference between these two ends of the Channel is normally 1 hour (Science Applications, Inc., 1984). Maximum tides occur near the coastline and gradually decrease away from shore. Expected tidal induced surface currents have speeds of around 10 cm/sec (0.2 km) in the open Channel (A. H. Glenn and Associates, 1979). Tidal data presented by Science Applications, Inc. (1984) are given in Table 1.3.1-1. Data are for Santa Barbara and Port Hueneme and are typical of expected values in the western and eastern portions of the Channel.

Table 1.3.1-1. Santa Barbara Channel Tides

Extreme High (observed January 1983)	8.0 ft. MLLW
Average Yearly Highest	7.3 ft. MLLW
Mean Higher High Water (MHHW)	5.4 ft. MLLW
Mean High Water (MHW)	4.7 ft. MLLW
Mean Sea Level (MSL)	2.8 ft. MLLW
Mean Low Water (MLW)	1.0 ft. MLLW
Average Yearly Lowest	-1.8 ft. MLLW
Extreme Low (Predicted)	-2.6 ft. MLLW

Source: National Ocean Service, 1988.

Santa Barbara Channel Wave Climatology

Along Southern California, the most protected coastal area is from Point Conception to Ventura. Oceanic waves cannot approach this shoreline without being modified by the Channel Islands (Anacapa, Santa Cruz, Santa Rosa, San Miguel) or drastically refracted over the shelf (Chambers, 1992). Protection afforded by the offshore islands is generally

so complete that significant waves over the shelf are mainly formed in the local area. This restricted fetch allows, for the most part, development of low waves with short lengths and periods.

Winds, waves and swell in the Santa Barbara Channel are produced by four basic meteorological patterns: Eastern Pacific High, Eastern Pacific Low, Tropical Cyclones, and Southern Hemisphere Low.

The Eastern Pacific High (EPH) occurs over the area of interest most of the year especially during the late spring, summer, and fall. Due to the dominating influence of the EPH, waves approach from the west most of the time. Consequently, the primary direction of longshore sediment transport within the littoral cell is toward the east and south (downcoast) (Chambers, 1992).

The Eastern Pacific Low (EPL) generates the largest waves within the Santa Barbara Channel during the months of November to April. These waves generally approach the shoreline from the west to northeast. Not only are these waves high, but they can occur when fluvial discharges from the rivers and streams maximize. Consequently, EPL events may also be responsible for movement of large amounts of sediment in a relatively brief time period (Chambers, 1992).

The Tropical Cyclones (TC) develop off the west coast of Mexico and can produce fairly large waves in Southern California, but their impacts to the project area are basically insignificant. The most important TC to have affected Southern California in the past 75 years occurred in September 1939 and produced significant wave heights of about 4.6 m (15 ft) from the south quadrant at the east end of Santa Barbara Channel (Chambers, 1992).

The Southern Hemisphere Low (SHL) activity occurs during the period from May to October. Although the wave periods are long, 16 to 22 seconds, the wave heights are relatively low (U.S. Army, 1987). Waves generated from SHL activity approach the coastline from the south (Bailard, 1991).

Tsunamis

Tsunamis are long-period waves that are generated by an earthquake or offshore volcano. Their effect is magnified along the shoreline, sometimes producing intense wave action. The tsunamis which have struck the Santa Barbara coast in the past have generally been

generated a considerable distance away. The probability of a locally generated destructive tsunami is considered remote (Science Applications, Inc., 1984).

Water Quality

Santa Barbara Channel waters feature mean surface temperatures from 57°F (14°C) near Point Conception to 59°F (15°C) at the eastern end. Salinity averages about 33.5 parts per thousand with very low variability. Dissolved oxygen generally ranges from six to seven milligrams per liter at the surface and is about 2 milligrams per liter at a depth of 825 feet (250 m). The sea water features low transparency within 1 mile (1.6 km) of the shoreline.

Natural oil, gas, and tar seeps significantly contribute to the levels of oil substances and sediments. More than 2,000 oil, gas, and tar seepage zones have been located in the California offshore area (SLC, 1977). The most widespread seepage occurs along the northernmost part of the Santa Barbara Channel with a concentration in three areas: Coal Oil Point, Point Conception, and the Santa Barbara to Rincon area. The total volume of oil, gas, and tar released in the Channel has been estimated at up to 100 barrels per day (SLC, 1977).

Onshore wells improperly plugged and abandoned from historic oil production activity at the turn of the century in the Summerland Beach area west of Loon Point continue to seep as much as 15 bbls/day of crude oil into the water. A semi-permanent sheen is often seen directly offshore at this location. A state-funded project was recently undertaken which permanently plugged and abandoned a portion of the remaining onshore wells.

The main water quality problem in the Santa Barbara Channel is caused by municipal and industrial discharges. Most disposal outfalls are located close to shore and thus only minimal dilution and dispersion is achieved. The communities of Santa Barbara, Montecito, Summerland, and Carpinteria all discharge secondary-treated sewage to the Channel. The total volume of discharges is approximately 12.23 million gallons per day (Chambers, 1992). These effluents contain about 30 milligrams per liter suspended solids and 60 milligrams per liter of chemical oxygen.

Local Setting

Platform-Specific Conditions

1. Offshore

   - Currents: All Platforms. All four platforms are located within the same basic littoral cell and are thus subject to currents of similar speed and direction. Velocities are within the 5-10 cm/sec range. Current studies of Dr. Terry Hendricks of the Coastal Water Research Project estimates that north to northwest is the predominant direction of the flow of currents near the project platforms (Simpson, 1977).

   - Water Quality (Platform Discharge). The only current discharge from the platforms is sanitary discharge from sewage treatment units, excluding Hazel, which has no discharges.

2. Onshore. As the proposed project will not impact nor be impacted by onshore water resources or water quality, those issues are not addressed.

Offshore Impacts

As the proposed project will be conducted primarily offshore, impacts to water will largely be associated with coastal processes. While the platform removal and pipeline abandonment will be subject to impacts from currents and coastal processes, the project would not result in any changes to currents or alterations of the course or direction of water movements. During the course of the proposed project, removal of the subsea portions of the platforms, and the exposing, cutting, and capping of associated pipelines will result in short term, less than significant turbidity impacts, as discussed below.

During past abandonment operations, water quality problems occurred with the removal of Platforms Helen and Herman in 1988. These problems were associated with pipelines from Platforms Helen and Herman that were not properly flushed and pigged at shutdown in 1973. The inadequate flushing and pigging of these lines caused some release of hydrocarbons during abandonment operations. In addition, no cathodic protection was in place following shutdown of the platforms. Considerable corrosion occurred to these pipelines over the 15 years prior to abandonment operations. The release of oil from these lines was a result of pigging operations during final abandonment operations. The pipelines

involved in the proposed project have been inspected and are in much better physical condition, and, as mentioned above, will be fully flushed and pigged prior to removal.

All conductors, pipelines, and other oil-containing vessels have been flushed in efforts to remove all residual oil. In spite of these precautions, small oil spills may occur while final cleaning is undertaken. These spills will not release more than one barrel (42 gals.) of fluids, as that is the estimated maximum amount of cleaning fluids in use at any one time. The majority of the spilled oil would float at the surface. In such cases, onsite spill response equipment would be immediately deployed. Some of the spilled oil, however, would be dispersed and retained in the water column. The weathering mechanisms that result in surface oil being retained in the water column include dissolution, dispersion, sinking, and sedimentation (MMS, 1989). No hazardous substances will be released to the ocean following detonation of the explosive charges. Chemicals used in the explosive charges will become inert gasses following detonation. Completion of the project will result in a beneficial impact to water quality by eliminating existing discharges from the platforms. No other impacts to water quality or quantity would result from implementation of the proposed project.

Resuspension of Bottom Sediments

1. Jacket Removal: All Platforms. Cuttings piles accumulated at the base of the caissons will likely be disturbed, but remain largely intact, as a result of the removal process. Impacts to water quality will result in short-term turbidity and localized redistribution of bottom sediments. Such increases will be temporary, and low current speeds (approximately 10 cm/sec) in this portion of the channel dictate that redistribution will be confined to a narrow radius around the platforms.

   Observations by Simpson (1977) have indicated that much of the disposal piles located at the platform base may be solidified, with thick layers (18-20 feet) of shells and other material covering the inner layer of hardened drill cuttings. Therefore, due to their weight and composition, cuttings piles will not likely be heavily resuspended by platform removal operations.

   The bottom will also be disturbed by platform removal barge anchors. Figure 1.1.2-1 shows the anchor spread and movements of a typical platform removal barge. See Offshore Impacts, page 8, for a description of the barge mooring process. As discussed in Offshore Impacts, anchors are not dragged on the bottom, but will create a disturbance while they are digging in. A correctly placed anchor typically results in a

physical disturbance on the bottom of about 35 feet (Chambers, 1986). Turbidity plumes of suspended sediment from each anchor will be short-term and localized to an approximately 100-foot radius within the water column. Water quality impacts from anchor placement and removal will be localized, short term, and less than significant. No residual water quality impacts are anticipated.

2. Offshore Pipeline and Power Cable Abandonment. Excavation required to expose pipeline pull sleds and power cables will entail the use of diver-held hand jets. These operations will result in short-term, localized turbidity impacts within the immediate region of the platforms. Turbidity plumes from suspended sediments are anticipated to be confined to a 100-foot radius surrounding areas of operations for short durations. Therefore, offshore water quality impacts from pipeline and power cable abandonment are determined to be less than significant.

Liquid Waste Disposal

All liquid wastes will be pumped to Carpinteria Plant via pipeline or stored in appropriate containers and hauled to shore for disposal. All tanks and storage vessels will be flushed to remove residual hydrocarbons. Spills of small quantities of liquid and solid materials (less than 10 gallons) such as diesel fuel may occur during the removal/abandonment process. With proper supervision, accidental discharges are expected to be infrequent and very small. In the event an oil or diesel spill were to occur in association with the abandonment operations, onsite response equipment will be stationed to quickly and effectively contain and recover the oil. Please refer to Section 4.0, "Oil Spill Contingency Plan" for a discussion of onshore and offshore oil spill contingency equipment and oil spill and response scenarios. Impacts will be short term and less than significant.

Sewage produced by removal work crews will be treated in U.S. Coast Guard approved units, including portable facilities, and discharged to the ocean after chlorination. These effluents should be completely dispersed throughout the water column within a few hundred yards of the platforms. Impacts will be short term and less than significant.

All marine vessels utilized in the removal/abandonment operations will use designated vessel traffic corridors and shipping lanes. This will serve to avoid collisions with other vessels not associated with the proposed project as well as inter-project vessels.

Onshore Impacts

Nearshore Pipeline Abandonment

As the nearshore pipelines will be abandoned in place, there will be no abandonment activities conducted within the nearshore area. Pipeline pigging and flushing operations will be conducted from the platforms. Pipeline grouting will be conducted at the valve box on the bluff. Therefore, as no work will actually be conducted in the nearshore area, there will be no impacts to water quality.

1. Currents

   As indicated in "Offshore Impacts" above, the offshore portion of this project will be subject to the impacts from the currents and coastal processes. However, the project would not result in any changes to currents or alterations of the course or direction of water movements. The onshore portion of this project will not have any impact on the ocean currents.

2. Runoff

   By their nature, neither the offshore nor the onshore portions of the proposed project would affect absorption rates, drainage patterns, etc.

3. Flood Waters

   See #2 above.

4. Surface Water

   See #2 above.

5. Discharge and Turbidity

   Offshore - Removal of the subsea portions of the platforms, and the exposing, cutting, and capping of associated pipelines will result in short-term, less than significant turbidity impacts. Barge anchor placement and removal will also create short-term, localized turbidity impacts.

All liquid and other wastes will be treated prior to discharge to the ocean. All impacts will be short-term and less than significant. Completion of the project will result in a beneficial long-term impact to water quality by eliminating existing discharges from platforms.

Onshore - There will not be any discharges associated with the onshore portion of this project. Short-term, localized turbidity will be created in the nearshore region during the pipeline capping phase. Coastal processes will rapidly disperse suspended sediments. Thus, onshore turbidity impacts will be less than significant.

7. Ground Water Quality

This project will not alter any aquifers nor consume any ground water. There will not be any changes to ground water quantity caused by this project.

8. Water Supplies

This project will have no effect on public water supplies.

9. Flooding

This project will not expose people or property to water-related hazards such as tidal waves or induce flooding.

10. Thermal Springs

No known thermal springs are located either onshore or offshore in the vicinity of this project which could be affected by this project.

D. & E. Plant and Animal Life

Regional Biologic Setting

Offshore

The project area, which encompasses the nearshore region between Fernald Point and Rincon Point, lies at the central portion of the Santa Barbara Channel. The Santa Barbara Channel is bordered on its seaward margin by the northern Channel Islands. In addition to protecting the coastline from significant waves, the islands support unique and important marine communities. Point Conception at the western end of the Santa Barbara Channel and the east-west orientation of the coast provide additional protection from northwest swells. The channel thus comprises a relatively protected and benign environment for marine life (Chambers, 1992).

The Santa Barbara Channel lies along important migration routes for marine mammals, fishes, and seabirds and also contains a rich, diverse assemblage of resident marine life. These abundant marine resources support a number of important commercial fisheries, mariculture, and kelp harvesting. Recreational activities dependent on Santa Barbara Channel marine life include sports fishing, SCUBA diving and snorkeling, bird watching, whale watching, and tide pooling. The Santa Barbara Channel's wealth of marine life also provides a resource for teaching and for scientific research (Chambers, 1992).

The Santa Barbara Channel is considered a biogeographical transition zone between the northern Oregonian Province and the more southerly marine assemblages of Southern California. Point Conception itself is usually pinpointed as the major biogeographic boundary point, but instead of a distinct break in distributions at Point Conception there is a zone of overlap of 4 to 5 degrees latitude (Murray, et al., 1980).

This section describes the marine biological resources of the platform removal project region. The following paragraphs describe important marine flora and fauna beginning with the platforms and the outer waters and progressing to near-shore communities.

1. Marine Flora and Fauna

- Avifauna. The Southern California Bight, in general, and the Santa Barbara Channel, in particular, have been characterized as exhibiting a diverse and abundant marine avifauna (Chambers Consultants and Planners, 1982; USDOI,

MMS, 1983). As a consequence of its location within a portion of the Pacific Flyway and due to the variability of its mainland and insular coastal terrain, the Santa Barbara Channel region, including Santa Barbara and Ventura Counties, provides foraging and breeding habitat for over 250 species of birds (Webster, et al., 1980).

The sandy beach habitats and occasional coastal cliff and nearshore rock prominence of the Channel are typically characterized by the presence of migrating and wintering populations of sandpipers (*Erolia* spp.), plovers (*Charadrius* spp.), and gulls (*Larus* spp.), as well as resident species of plovers, oyster catchers (*Haematopus bachmani*), and gulls. Table 1.4.1-1 lists the common marine bird species of the coastal area of the Santa Barbara Channel.

Dames and Moore (1977b) identified seven species which were characteristic of the offshore areas of the Santa Barbara Channel, including three species of gulls (Heermann's [*L. heermanni*], western [*L. occidentalis*], and Bonaparte's [*L. philadelphia*]) two species of cormorant (Brandt's [*Phalacrocorax penicillatus*] and double-crested [*P. auritus*]), the western grebe (*Aechmophorus occidentalis*), and the endangered brown pelican (*Pelecanus occidentalis*) (Tables 1.4.1-1 and 1.4.1-2).

- Fishes. By virtue of the diversity of habitats it encompasses and its proximity to a major biogeographical boundary (at Point Conception), the Santa Barbara Channel supports a diverse fish fauna. Of 554 species (144 families) of coastal marine fishes found in California waters, 481 species (129 families) are found off Southern California (between Point Conception and the Mexican border) (Miller and Lea, 1974). Most of these Southern California species occur in the Santa Barbara Channel. The fish species most commonly observed by commercial fish spotters while operating off central and Southern California were the Northern anchovy (*Engraulis mordax*) jack mackerel (*Trachurus symmetricus*), Pacific mackerel (*Scomber japonicus*), Pacific Sardine (*Sardinops sagax*), and bluefin tuna (*Thunnus thynnus*) (Squire, 1983). A partial list of the most commonly taken fishes by commercial fishing operations in the Santa Barbara Channel is provided in Table 1.8.1-1.

Table 1.4.1-1. Coastal Associated Birds Found Within the Platform Abandonment Project Area

	Seasonal Status		Seasonal Status
Seabirds			
PHALACROCORACIDAE		PODICIPEDIDAE	
Brandt's cormorant	RB	Eared grebe	WV
Double-crested cormorant	RB	Horned grebe	WV
Pelagic cormorant	RB	Pied-billed grebe	RB
		Western grebe	WV
HYDROBATIDAE		ALCIDAE	
Ashy storm petrel	SR	Ancient murrelet	WV
Black storm petrel	SR	Cassin's auklet	SR
Leach's storm petrel	SR	Common murre	WV
		Pigeon guillemot	SR
		Rhinoceros auklet	WV
		Tufted puffin	WV
		Xantus' murrelet	SR
PROCELLARIIDAE		LARIDAE	
Manx shearwater	X	Arctic tern	X
Northern fulmar	WV	Black tern	X
Pink-footed shearwater	X	Black-legged kittiwake	WV
Sooty shearwater	X	Bonsparte's gull	WV
		California gull	WV
		Caspian tern	M
		Pomarine jaeger	X
		Parasitic jaeger	X
		Glaucous-winged gull	WV
		Western gull	RB
		Herring gull	WV
		Ring-billed gull	WV
		Mew gull	WV
		Heerman's gull	WV
		Common tern	X
		Least tern	SR
PELECANIDAE			
Brown pelican	RB		
Migratory Water Fowl			
ANATIDAE		GAVIIDAE	
American wigeon	WV	Arctic loon	WV
Black scoter	WV	Common loon	WV
Blue-winged teal	WV	Red-throated loon	WV
Brant	M		
Bufflehead	WV		
Canvasback	WV		
Cinnamon teal	WV		

Table 1.4.1-1. (Continued)

	Seasonal Status		Seasonal Status
Migratory Water Fowl (continued)			
ANATIDAE (continued)			
Fulvous whistling duck	C		
Gadwal	WV		
Greater scaup	WV		
Green-winged teal	WV		
Lesser scaup	WV		
Mallard	WV		
Northern pintail	WV		
Northern shoveler	WV		
Red-breasted merganser	WV		
Redhead	WV		
Ruddy duck	WV		
Surf scoter	WV		
White-winged scoter	WV		
Wood duck	WV		
Shorebirds			
PHALACROCORACIDAE		HAEMATOPODIDAE	
Brandt's cormorant	RB	Black oystercatcher	M
Double-crested cormorant	RB		
Pelagic cormorant	RB		
SCOLOPACIDAE		CHARADRIIDAE	
Black turnstone	WV	Black-bellied plover	WV
Common snipe	WV	Killdeer	RB
Dunlin	WV	Lesser golden plover	WV
Greater yellowlegs	WV	Semipalmated plover	M
Least sandpiper	WV	Snowy plover	WV
Lesser yellowlegs	WV		
Long-billed curlew	WV		
Long-billed dowitcher	WV		
Marbled godwit	WV		
Red knot	X		
Ruddy turnstone	WV		
Sanderling	WV		
Short-billed dowitcher	X		
Solitary sandpiper	MM		
Spotted sandpiper	WV		
Surfbird	WV		
Wandering tattler	WV		
Western sandpiper	WV		
Whimbrel	WV		
Willet	WV		

Table 1.4.1-1. (Continued)

	Seasonal Status		Seasonal Status
Wetland Birds			
ARDEIDAE		RALLIDAE	
American bittern	WV	American coot	WV
Black-crowned night heron	RB	Black rail	C
Cattle egret	WV	Clapper rail	SUN
Great blue heron	M	Common Gallinule	WV
Great egret	WV	Virginia rail	WV
Green-backed heron		Sora	WV
Snowy egret			
RECURVIROSTRIDAE		THRESKIORNITHIDAE	
American avocet	M	White-faced ibis	M
Black-necked stilt	RB		

RB: **Resident Breeder.** The species is a year-round resident and breeds within the given habitat type.

SR: **Summer Resident.** The species occurs only as spring-summer breeder; migrates south for winter months.

WV: **Winter Visitor.** The species occurs only as a winter visitor and is not known to breed in the region.

M: **Spring/Fall Migrant.** The species occurs within the given habitat only as a spring or fall migrant.

C: **Casual.** Records for the species are few and intermittent for the region.

X: **Transient.** The species occurs as a regular visitor to the project site. Pertains to wide-ranging species with extensive home range territories.

SUN: **Status Uncertain.** Documentation of occurrence or breeding is based on limited information; regional status not clearly defined.

Source: Chambers, 1992

Table 1.4.1-2. Seabird Species

Common Name	Species Name
Common loon	*Gavia immer*
Arctic loon	*Gavia arctica*
Red-throated loon	*Gavia stellata*
Western grebe	*Aechmophorus occidentalis*
Eared grebe	*Podiceps caspicus*
Pink-footed shearwater	*Puffinus creatopus*
Manx shearwater	*Puffinus puffinus*
Sooty shearwater	*Puffinus griseus*
Black storm-petrel	*Oceanodroma melania*
Ashy storm-petrel	*Oceanodroma homochroa*
Least storm-petrel	*Oceanodroma microsoma*
Brown pelican	*Pelecanus occidentalis*
Brandt's cormorant	*Phalacrocorax penicillatus*
Double-breasted cormorant	*Phalacrocorax auritus*
Pelagic cormorant	*Phalacrocorax pelagicus*
Black brant	*Branta nigricans*
Black scoter	*Melanitta nigra*
White-winged scoter	*Melanitta deglandi*
Surf scoter	*Melanitta perspicillata*
Northern phalarope	*Lobipes lobatus*
Parasitic jaeger	*Sterorarius parasiticus*
Pomarine jaeger	*Steroratrius pomarinus*
Western gull	*Larus occidentalis*
Herring gull	*Larus argentus*
California gull	*Larus californicus*
Ring-billed gull	*Larus delawarensis*
Mew gull	*Larus canus*
Heermann's gull	*Larus heermanni*
Bonaparte's gull	*Larus philadelphia*
Common tern	*Sterna hirundo*
Forster's tern	*Sterna forsteri*
Elegant tern	*Thalasseus elegans*
Pigeon guillemot	*Cepphus columba*
Rhinoceros auklet	*Cerorhinea monocerata*
Cassin's auklet	*Ptychoramphus aleutica*
Xantus' murrelet	*Endomychura hypoleuca*

The above are common and scientific names of the seabirds encountered in the study area, Santa Barbara Channel.

Source: Varoujean, et al., 1983

- Marine Mammals

  - Cetaceans. Thirty-four of the 111 marine mammal species known worldwide have been recorded off the Southern California coast. Twenty-seven of these mammals are cetaceans (whales, dolphins, and porpoises). The remaining seven species are carnivores represented by six species of seals and the California sea otter (Table 1.4.1-3).

    Twenty of the 27 cetaceans recorded in the Southern California Bight are oceanic species widely distributed throughout the Pacific Ocean (Watson, 1981). These open ocean species occasionally transit the coastal waters within the Santa Barbara Channel.

    Fourteen species of cetaceans commonly occur within the Channel because of either their abundance, migratory pattern, or coastal habitat preference. These include Dall's porpoise (*Phocoenoides dalli*), Pacific pilot whale (*Globicephala macrorhynoa*), Pacific whitesided dolphin (*Lagenorhynchus obliquens*), common dolphin (*Delphinus delphis*), bottlenose dolphin (*Tursiops truncatus*), gray whale (*Eschrichtius robustus*) and Minke whale (*Balaenoptera acutorostrata*) (Table 1.4.1-4).

Table 1.4.1-4. Seasonal Status of Cetacean Species in the Santa Barbara Channel Area

Species	Status	Population Peak
California gray whale	Migrant	21,000; winter and spring
Blue whale	Visitor	<100; summer
Fin whale	Resident	<50; spring and summer
Minke whale	Resident	<250; spring, summer, and autumn
Humpback whale	Seasonal visitor	<50; spring, summer, and autumn
Northern right whale	Rare visitor	Unknown
Common dolphin	Resident	10,000; summer and autumn
Pacific white-sided dolphin	Resident	2,000; spring and autumn
Northern right whale dolphin	Seasonal visitor	1,000; winter and spring
Dall's porpoise	Resident	1,000; year-round
Risso's dolphin	Visitor	<50; summer
Pacific bottlenose dolphin	Visitor	<50; spring
Killer whale	Visitor	<50; summer and winter
Beaked whale (2 species)	Rare visitor	Unknown

Source: Chambers, 1992

Table 1.4.1-3
MARINE MAMMALS OF THE SOUTHERN CALIFORNIA BIGHT
(Point Conception-Mexican Border)

Common Name	Genus/Species	Legal Status		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
PINNIPEDS															
California sea lion	*Zalophus californianus*														
Steller sea lion	*Eumetopias jubatus*	T													
Northern fur seal	*Callorhinus ursinus*														
Guadalupe fur seal	*Arctocephalus townsendi*	T													
Northern elephant seal	*Mirounga angustirostris*														
Harbor seal	*Phoca vitulina* **														
FISSIPEDS															
Sea otter	*Enhydra lutris*	T													
CETACEANS															
Bryde's whale	*Balaenoptera edeni*														
Minke whale	*Balaenoptera acutorostrata*														
Blue whale	*Balaenoptera musculus*	E													
Sei whale	*Balaenoptera borealis*	E													
Finback whale	*Balaenoptera physalus*	E													
Humpback whale	*Megaptera novaeangliae*	E													
Gray whale	*Eschrichtius robustus (gibbosus)*														
Common dolphin	*Delphinus delphis*														
Pacific pilot whale	*Globicephala macrorhyncus*														
Risso's porpoise	*Grampus griseus*														
White-sided dolphin	*Lagenorhynchus obliquidens*														
Northern right whale dolphin	*Lissodelphis borealis*														
Killer whale	*Orcinus orca*														
Harbor porpoise	*Phocoena phocoena*														
Dall (spray) porpoise	*Phocoenoides dalli*														
False killer whale	*Pseudorca crassidens* *														
Long-beaked dolphin	*Stenella coeruleoalba* *														
Pacific bottlenose dolphin	*Tursiops gilli*														
Sperm whale	*Physeter catodon* *	R													
Pygmy sperm whale	*Kogia breviceps* *														
Baird's beaked whale	*Berardius bairdii* *														
Densebeaked whale	*Mesoplodon ginkgodens* *														
Cuvier's beaked whale	*Ziphius cavirostris* *														
Pacific right whale	*Balaena glacialis* *	E													
Pacific spotted dolphin	*Stenella graffmani* *														
Rough-toothed dolphin	*Steno bredanensis* *														
Hubb's beaked whale	*Mesoplodon carlhubbsi* *														

* Occasional Visitor
** Campground Beach closed during seal pupping season December 1 through May 31.

R Rare (California State designation)
T Threatened (Federal)
E Endangered (Federal)
Source: Bureau of Land Management, 1979

Presence in the Santa Barbara Channel
Breeding, pupping, hauling/ calving season

The whiteside dolphin, common dolphin, and pilot whale are predominantly offshore deepwater species, but they occasionally transit the area of the lease tracts while migrating inshore during winter months or while following prey (Watson, 1981). The bottlenose dolphin, however, is predominantly a nearshore species commonly observed riding the surf or bow waves of vessels along the mainland coast of Southern California and is the most likely toothed whale (Odontoceti) to occur within the vicinity of all the lease tracts. Two baleen whales (Mysticeti), the grey whale and the Minke whale, can also be expected to transit nearshore within the Santa Barbara Channel. Minke whale favor shallow water and venture near shore more often than other baleen whales (Watson, 1981). They seem to be curious about shipping and approach moving vessels.

The recovery of the gray whale population over the past several years has been successful enough to elevate this species to "threatened" status. Approximately 17,000 whales migrate through Southern California waters twice annually, traveling from arctic feeding grounds to calving grounds off Baja and back. This 20,917-km (11,297-nm) migration is considered the longest of any mammal. Gray whales are not social animals, but they do congregate as they migrate along common routes which generally follow the coast. Point Conception is a major point from which the historic migratory path splits. Some animals choose the coastal route and move through the Channel, while others travel offshore along the outer Channel Islands route to their Baja breeding grounds. They transit the project area during their southward migration from November through January, and then again from February through May on the return north to their feeding grounds. More animals (usually females with calves) move along the coastal nearshore route in spring. They also tend to move more slowly along this route and their numbers are more concentrated. Gray whales have been observed within 91 m (300 ft) of shore. They have been seen moving through both kelp beds and sand bottom areas. They are therefore likely to transit both of the lease tracts.

- Pinnipeds. Six of the 36 species of pinnipeds known worldwide occur off the Southern California coast. Four are eared seals (Otariidae) and two are earless seals (Phocidae). Otariidae are represented by Guadalupe fur seal (*Arctocephalus townsendi*), northern fur seal (*Callorhinus ursinus*), Steller sea lion (*Eumetopias jubatus*), and California sea lion (*Zalophus californianus*).

The Steller sea lion was listed as a federally threatened species by the National Marine Fisheries Service on December 4, 1990. The Channel Islands, especially San Miguel, serve as rookeries for all of the above-mentioned pinnipeds except the Guadalupe fur seal (Table 1.4.1-5).

By far the most abundant eared seal in the Southern California Bight is the California sea lion. It is estimated that there are 74,000 animals in Southern California alone (W. Perryman, 1984, personal communication, Chambers, 1992). Three distinct populations exist and each has been designated as a separate subspecies. *Zalophus c. californianus* breeds along the west coast from Baja to the Farallon Islands off San Francisco and ranges as far north as Vancouver, British Columbia. Like Steller sea lion, California sea lion are opportunistic feeders and forage relatively close to shore when compared to fur seals. Although California sea lion use offshore islands as rookeries, they do haul out to rest on the mainland. They are commonly observed transiting the Channel individually and in groups. This is the only pinniped off California that regularly uses man-made structures such as docks, buoys, oil and gas structures, and even slow moving vessels on which to haul out. California sea lions commonly occur within the subject lease tracts and at times use mooring buoys and support vessels as haul-out sites on which to rest between foraging bouts.

Two species of earless seals (Phocidae) live and breed within the Southern California Bight: the northern elephant seal and the Pacific harbor seal. Northern elephant seal range from Alaska to Baja and breed on offshore islands from the Farallon Islands off San Francisco to San Benito Island off Baja California (Haley, 1978). During the breeding season an estimated 30,000 northern elephant seal use the Channel Islands as rookeries (W. Perryman, 1984, personal communication, in Chambers, 1992). These animals usually remain offshore foraging in deep water, only returning to shore during the breeding season and for a short time in summer months when they haul out in small groups to molt (Table 1.4.1-5).

Table 1.4.1-5. Species of Pinnipeds Found in the Santa Barbara Channel Area

Species	Status	Seasons of Maximum Abundance
California Sea Lion *Zalophus californianus*	Year-round resident	Peak numbers on land during summer breeding season on San Miguel Island.
Harbor Seal *Phoca vitulina richardi*	Year-round resident	Peak numbers on land in early summer molting season. Breeding season occurs from late February through May.
Northern Fur Seal *Callorhinus ursinus*	Year-round resident	Breeds/pups on San Miguel Island in the summer. Population on rookeries declines greatly following breeding season. Pelagic population in offshore waters augmented by migrants from the Bering Sea in winter and spring.
Northern Elephant Seal *Mirounga angustirostris*	Year-round resident	Breeds/pups on San Miguel Island in the winter. Some age classes on land in each season for annual molting.
Steller (Northern) Sea Lion *Eumetopias jubatus*	Summer visitor	No longer breeds in the area; a few adult and sub-adult males usually present on San Miguel Island and associated rocks in the summer.
Guadalupe Fur Seal *Arctocephalus townsendi*	Rare seasonal visitor	One or more adult or sub-adult males have been observed on San Miguel Island each summer in recent years.

The Pacific harbor seal is the most common and widely distributed pinniped in the world. This species is divided into five subspecies according to their distribution. The only subspecies that occurs in the project area is the eastern Pacific harbor seal (*Phoca vitulina richardi*) which ranges along the Pacific coast from Alaska to Baja California. There are an estimated 4,000 animals within the Southern California Bight. Although these animals are common and widely distributed, they do not form large groups. Pacific harbor seal maintain small (usually <100), stable local populations at haul-out sites scattered along the mainland and island coastlines. Unlike all the other pinnipeds occurring off Southern California, Pacific harbor seal maintain haul-out sites on the mainland on which they pup and breed (Rambo, 1978; Bowland, 1978). These seals are commonly observed on and along the mainland coast. There are at least six continuously inhabited haul-out sites from Point Conception to Point Dume, and probably 12 more used as occasional haul-out sites. Four major hauling grounds of the Pacific harbor seal are located directly onshore of the two eastern platforms, Heidi and Hope: Sand Point; Carpinteria State Beach; 0.3 km west of Chevron Pier, Carpinteria; and 0.1 km east of Chevron Pier, Carpinteria (Table 1.4.1-6) (Hanan, 1990).

Table 1.4.1-6. Major Hauling Grounds of the Harbor Seal (*Phoca vitulina*) Within or Near the Casitas Pier

Locations	Maximum Count Between 1982 and 1989	1989
Sand Point	11	0
Carpinteria State Beach	53	0
0.3 km West of Chevron Pier, Carpinteria	70	66
0.1 km East of Chevron Pier, Carpinteria	116	3

From Hanan 1990

Table 1.4.1-3 illustrates the seasonal presence of known cetaceans and pinnipeds in the Santa Barbara Channel.

- Kelp beds. The coastline along much of the Southern California coast has typically been fringed by large beds of giant kelp (*Macrocystis pyrifera*) (MMS, 1983). Kelp offers food, attachment sites, and microhabitats for invertebrates and provides food and shelter for fishes. Although few fish species seem to be completely dependent on kelp for survival, kelp beds probably contribute to higher fish productivity and higher standing crop. Kelp has been shown to be especially important as a refuge for young fishes (Ebeling and Laur, 1985).

  In addition to the importance of living kelp as a structural and nutritional resource, drift kelp is extremely important in detritus-based food chains. Drift kelp is an important food source for such key species as sea urchins and abalone. Drift kelp also seems to be of nutritional and structural importance well beyond the limits of the kelp bed both inshore on intertidal beaches and offshore in deeper water habitats. Kelp beds between Point Conception and Ventura have historically supported the largest kelp cover in Southern California: 64 percent of the mainland kelp bed area in 1977 (Hodder and Mel, 1978).

  Kelp beds along the California coast are numbered in ascending order starting at the California-Mexican border. Kelp beds 20 and 21 are found within the abandonment project area. Figure 1.4.1-1 shows the kelp beds as they were mapped in 1989. This figure also shows the maximum kelp area observed in the region between 1980 and 1989. A major "Growing Area" of the kelp is located directly offshore of Fernald Point and extends eastward nearly to Loon Point in Summerland. The width of this band spans the entire width between Platforms

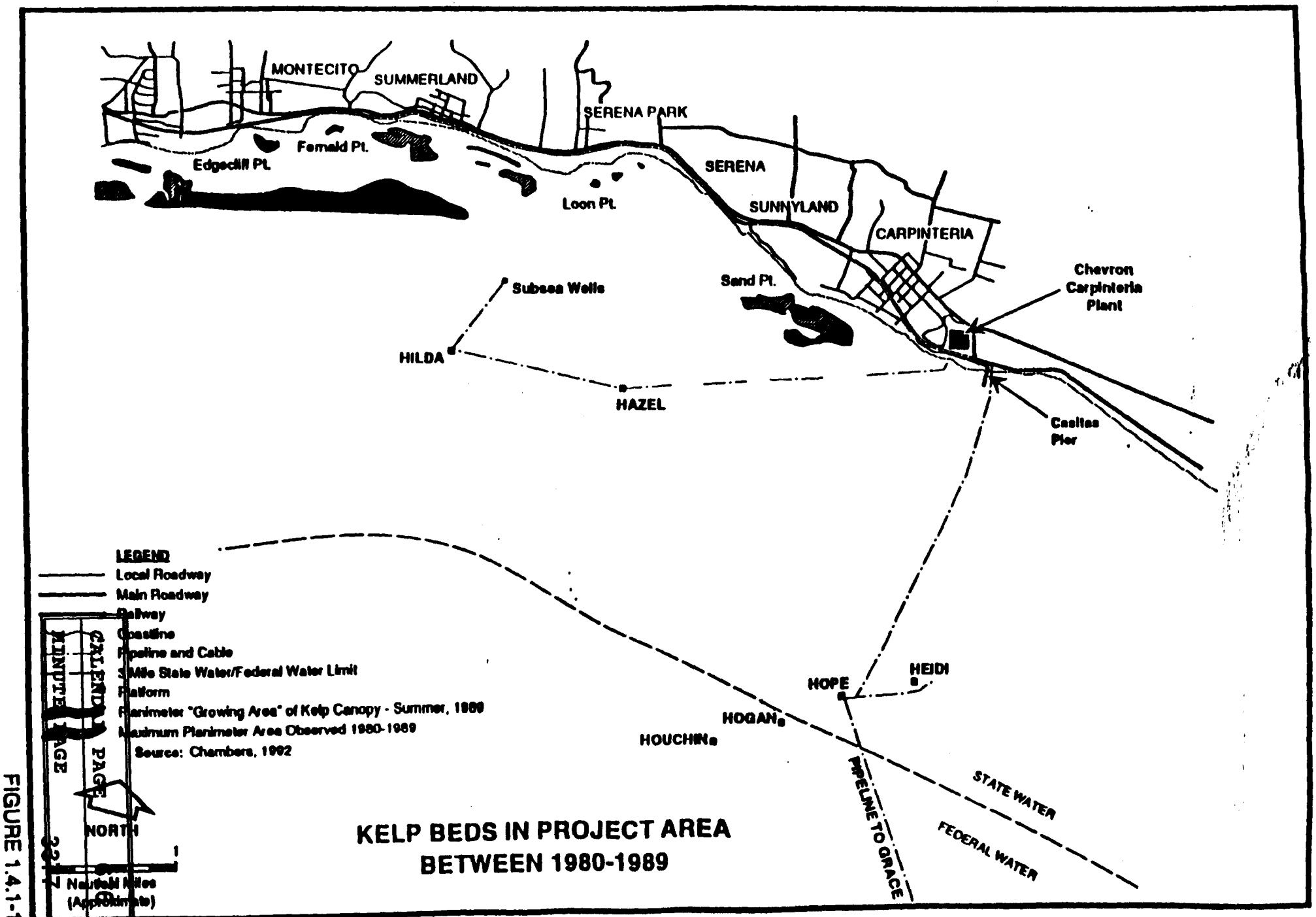


FIGURE 1.4.1-1

KELP BEDS IN PROJECT AREA BETWEEN 1980-1989

Hazel and Hilda. Another substantial kelp bed is found on Carpinteria Reef offshore from Sand Point directly inshore from Platforms Hope and Heidi.

Aerial surveys of kelp beds offshore Summerland were conducted on March 22, 1988 by Kelco, a commercial kelp harvesting company operating in Southern California. According to Glantz of Kelco (August 17, 1990), the kelp beds offshore Summerland have changed little in size since March 1988. The kelp beds are scattered, close to shore, and are not harvested commercially.

- Plankton. The term plankton refers to organisms that drift with the currents and includes the phytoplankton or drifting plants such as diatoms and dinoflagellates, and the zooplankton which are slightly mobile animals such as small crustaceans, swimming mollusks, jelly fish, and free-swimming larvae of fishes and bottom animals. Planktonic communities are characterized by patchiness in distribution, composition, and abundance (MMS, 1983).

  Oguri and Kanter (1971) measured the phytoplankton productivity of the Santa Barbara Channel following the Santa Barbara oil spill of 1969. They concluded the productivity of the Santa Barbara Channel is the result of a number of factors including seasonal upwelling, runoff from land, and sewage discharges. Pattern of seasonal nutrient enrichment of the waters increase the phytoplankton populations. Coastal currents can interact with the shoreline to produce upwelling and eddies that can hold a phytoplankton population in fertile areas. Phytoplankton productivity peaks during the spring months. The high productivity values in the spring months are about five times the summer values and about ten times the low winter values.

  Zooplankton are composed of members of many phyla. Holoplankton ("Entire" Drifters) spend their entire lives as floaters while Meroplankton ("Part" Drifters) generally spend their larval or juvenile phase in the plankton. Zooplankton species include many of the fishes and invertebrates important to commercial recreational fisheries that spend the early stages of their life histories in the plankton.

  The most comprehensive data for zooplankton in California waters comes from the CALCOFI (California Cooperative Fisheries Investigation) program initiated in 1949. This program has shown that zooplankton tend to be extremely variable in space and time. CALCOFI data have shown that zooplankton abundance at any

given location may vary by as much as an order of magnitude from season to season and year to year (Thrailkill, 1969). The occurrence of particular zooplankton species or populations along the California coast is governed largely by currents. Long-term averages of zooplankton standing stock in the Southern California Bight show peak zooplankton abundances in the spring and summer months and lowest abundances during the winter (Kramer and Smith, 1972). Copepods, thalaceans, euphausids, and chaetognaths usually accounted for the bulk of the zooplankton biomass in the CALCOFI samples. The most abundant fish larvae were those of northern anchovy, pacific hake, and rockfish (Kramer and Smith, 1972).

- Benthos. Twenty-two species of macroinvertebrates were collected in two trawl samples from the Carpinteria tract (3150) near platforms Hope and Heidi [water depths of 59 and 100 ft (18 and 30 m), respectively]. Eight species of algae and seagrasses (*Phyllospadix torreyi*) were also collected in the shallow-water trawl sample. The most common macroinvertebrates in both trawl samples were *Sicyonia ingentis* and the sand shrimp (*Crangon nigromaculata*) (CSA, 1985).

  A diver transect survey was conducted in the hard-bottom area inshore of the platform sites. Four benthic habitat types were identified along the two transects surveyed: sand bottom; large rock outcrops with little or no attached kelp; large rock outcrops with attached kelp, interspersed with sand bottom; and small, widely scattered rock outcrops (some with attached kelp). Few macroepibiota were seen in the sand-bottom areas, but a variety of macroinvertebrates were common in the rocky habitats. Kelp was the most conspicuous alga, but other brown (*Desmarestia ligulata* var. *ligulata*) and red (*Rhodymenia* spp., *Gigartina* spp., *Scinaia articulata*) algae were common. Conspicuous invertebrates included sea urchins (*Strongylocentrotus franciscanus*) and (*S. purpuratus*); sea stars (*Pisaster brevispinus* and *P. giganteus*); the gorgonian (*Muricea* cf. *fruticosa*); and the whelk, (*Kelletia kelletii*) (CSA, 1985).

Onshore

1. Intertidal

As discussed in Section 1.1.1.3, Intertidal Surface Geology, intertidal habitat shoreward of the platform removal project area consists of rock, boulder, and sand habitat. Boulder fields are often present under sandy beaches and are alternately exposed and

covered by shifting sand. East of Fernald Point the intertidal substrate is predominantly cobble and sand with prominent rocky intertidal only at Carpinteria.

Rocky intertidal organisms tend to be distributed in bands or zones related to tidal height. The occurrence of species is based on physical and biological factors such as ability to withstand exposure to air and to survive "sanding-in" as well as competition for limiting resources, especially space. Typical dominant rocky intertidal organisms are the barnacle (*Chthamalus fissus*), blue green algae and the green algae (*Enteromorpha* spp. and *Ulva* spp.) in the upper intertidal and filamentous red algae, corralline algae and at some sites, mussels (*Mytilus* spp.) in the mid-intertidal. The low intertidal is generally dominated by surf grass (*Phyllospadix torreyi*) and feather boa kelp (*Egregia menziesii*). Brown algae (*Halidrys dioica*) is also characteristic of the low intertidal (Chambers, 1992).

Compared to the highly productive and diverse rocky intertidal, the sandy intertidal is relatively low in productivity and diversity. Sandy intertidal organisms must cope with a rigorous environment of constantly shifting sands. There is, however, a characteristic suite of organisms that are adapted to this environment and, like the marine biota of the rocky intertidal, they show a zonation related to tidal exposure. Characteristic sandy beach organisms of the project region include the sand crab (*Emerita analoga*), t' bloodworm (*Euzonus mucronata*), and beach hoppers (*Orchestroidea* spp.) (MMS, 1983).

2. Unique Marine Environments

The State of California has established four categories for those areas within the State which are of special concern due to their biological importance. These categories include: (1) ecological reserves; (2) marine life refuges; (3) ecological preserves; and (4) area(s) of special biological significance (ASBS). Ecological reserves and marine life refuges have been maintained to protect marine resources previously threatened by human disturbances and the indiscriminate collection of organisms. Areas of special biological significance are those areas designated by the State Regional Water Quality Resource Board (SRWCB) (1975) which contain biological communities of such extraordinary, although unquantifiable, value that no risk of change in their environment resulting from man's activities can be acceptable (Chambers, 1992).

In addition to those categories, the United States Department of the Interior (USDOI) has established two additional categories to classify important biological environments:

(1) unique biological areas (UBA); and (2) biologically sensitive areas (BSA). Although not legally defined, these clarifications include areas that have been determined to be potentially biologically sensitive to oil and gas activities. Local coastal plans also provide a mechanism for the identification of unique environments at the county or city level.

There are 9 ecological reserves, 9 marine life refuges, and 15 ASBS between Point Conception and the U.S.-Mexican border (MMS, 1983). The unique marine environments located within the platform abandonment project area have been summarized in Table 1.4.1-7. These are considered to be exceptionally productive biological habitats, providing breeding, nesting, and foraging sites for a variety of fauna, including several endangered species. Carpinteria Marsh (El Estero), located just west of the City of Carpinteria, is the largest marsh complex (150 acres of marsh, 25 acres of mud flats, 15 acres of tidal channels) in Santa Barbara County. It has been designated as both a biologically sensitive area and an environmentally sensitive habitat, and researchers have identified over 120 species of birds which utilize the marsh. It is also habitat for two endangered species of avifauna; the light-footed clapper rail and Belding's savannah sparrow, as well as a population of the endangered plant, salt marsh bird's beak (Chambers, 1992).

Table 1.4.1-7. Unique Marine Environments within the Eastern Santa Barbara Channel Region (adapted from: USDOI, MMS, 1983; Science Applications, Inc., 1984; Westec Services, Inc., 1984; Woodward-Clyde Consultants, 1984)

Carpinteria Marsh (El Estero)	BSA: SBC and CC environmentally sensitive habitat; extensive marsh/estuarine habitat; intense avifauna utilization, including endangered light-footed clapper rail and Belding's savannah sparrow; salt marsh bird's beak plant also present.
Casitas Pier (Chevron Pier)	BSA; SBC and CC environmentally sensitive habitat; haul-out and rookery area (Harbor Seal).
Carpinteria Reef	SBC and CC environmentally sensitive habitat; rocky intertidal and subtidal habitat.

BSA: biologically sensitive area
CC: City of Carpinteria
SBC: Santa Barbara County

Southern California coastal wetlands, such as the Carpinteria Marsh, provide four critical habitat functions for migratory waterfowl and shorebirds:

- They furnish wintering waterfowl and shorebirds with sufficient food, rest, and space to minimize natural mortality through the fall and winter months.
- They return adequate numbers of healthy birds to the breeding grounds to insure maintenance of Flyway population levels.
- They provide spring and fall migration habitat for birds wintering in Southern California and Mexico.
- They provide "back-up" habitat during dry years when the Central Valley habitat is minimal.

Wetlands also provide excellent habitat for juvenile fishes because of their warm, calm conditions, high food supply, and protection from predation by larger fishes (Currin, et al., 1984; Boesch and Turner, 1984). Thus, a number of fish species including topsmelt and diamond turbot use coastal wetlands as nurseries. Shallow coastal embayments seem to be particularly important for California halibut. This important sport and commercial species which uses coastal wetlands as a nursery area appears to have declined as a result of lost wetland acreage (Onuf and Quammen, 1985; Kramer, 1990).

Endangered/Threatened/Candidate Species

This section discusses species within the region of the proposed platforms and associated pipelines which have been listed by the federal government of the State of California as Endangered of Threatened or which have been proposed as candidates for listing.

1. Plants

One plant species, the salt marsh bird's-beak, (*Cordylanthus maritimis* ssp. *maritimis*), has been listed as endangered by both the State of California and by the federal government. The salt marsh bird's-beak has become endangered primarily through the loss of its salt marsh habitat. Carpinteria salt marsh is the northwestern limit of occurrence for this plant (Ferren, 1985).

2. Fishes

There are no marine fish species within the platform and pipeline removal/abandonment area which are listed by the state or federal government as threatened or endangered.

3. Birds

Several listed bird species inhabit the offshore and onshore areas surrounding the platforms and pipelines.

- California Brown Pelican (*Pelecanus occidentalis californicus*). The California brown pelican was listed in 1970 and 1971 by the U.S. Fish and Wildlife Service and the California Fish and Game Commission following several years of pollutant-related (DDT) reproductive failures (Schreiber and De Long, 1969; Keith, et al., 1971; Risebrough, 1972; Gress and Anderson, 1983). Although population levels have gradually recovered from the effects of DDT, the subspecies retains its endangered status due to its low reproductive rate and small U.S. breeding population. Within California, brown pelicans only nest on the Channel Islands; however, they are classed as relatively common year-round visitors to the nearshore waters of Santa Barbara and Ventura County (Lehman, 1982; Webster, et al., 1980). Peak abundance occurs July through December when migrants from Mexico are present.

  Brown pelicans forage in the nearshore environment out to about 20 km (12 miles). They locate prey while flying and then plunge from the air to capture the prey underwater. This requires clear waters for prey location, as they feed almost exclusively on near-surface schooling fish. Pelicans commonly occupy offshore platforms as daytime roosting sites.

- Belding's Savannah Sparrow (*Passerculus sandwichensis beldingi*). The Belding's savannah sparrow has been a California State-Listed Endangered subspecies since 1974 and a Category 2 candidate for federal listing. It is one of four savannah sparrows that inhabit a wide variety of grassland, tundra, mountain meadow, and marsh habitats throughout north and central America. In addition to the Carpinteria Marsh, breeding occurs at Goleta Slough, Oxnard Beach, and McGrath State Park.

- Light-Footed Clapper Rail (*Rallus longirostris levipes*). The light-footed clapper rail is designated as an endangered species by the federal government and the State of California. Preferred habitat is tidal salt marshes with extensive growths of cord grass or pickleweed (Massey, et al., 1984). Censuses taken between 1980 and 1988 indicate that this species occurs in the central coast only in Carpinteria Marsh and Mugu Lagoon (Chambers Group, 1992).

- Snowy Plover (*Charadrius alexandrius nivosus*) - The coastal breeding population of the snowy plover is severely depleted and was listed as threatened by the Federal government on March 5, 1993. This small shorebird nests on large expansive sandy areas and forages on sand flats or intertidal mudflats. In addition to the Carpinteria Marsh, the snowy plover nests near the mouth of the Santa Clara River, on Ormond Beach, on McGrath State Beach, and at Mugu Lagoon between mid-March and the end of July (Page and Stenzel, 1981). Snowy plovers are commonly seen around the sandy beaches at the mouths of Devereux and Goleta Sloughs during the winter migration (Chambers Group, 1987).

4. Marine Mammals

- Cetaceans. The cetacean fauna of Southern California waters includes six species of whales that are listed as endangered and one as threatened by the federal government. Endangered species include: the blue, fin, sei, humpback, the northern right whale, and the sperm whale. As a result of population growth stemming from decreased fishing pressure, the status of the California gray whale was changed from endangered to threatened in 1992. All except the sperm whales occur seasonally in the SBC. Sperm whales are found almost exclusively in deeper offshore waters beyond the continental shelf.

  Location of sightings of whales recorded on BLM-OCS surveys conducted from 1975-1978 indicate that only the California gray whale would be expected in the nearshore waters of the platform removal project area.

- Pinnipeds, Fissipeds (Sea Otters), and Reptiles (Sea Turtles). The pinniped species found in the SBC that are designated as rare, threatened, or endangered on state or federal lists are the Steller (northern) sealions (*Eumatopias jubatus*) and Guadalupe fur seal (*Arctocephalus townsendi*), both federally and state listed threatened species. Guadalupe fur seals presently breed only on Isla de

Guadalupe, Baja California, Mexico. The Guadalupe fur seal would not be expected in the nearshore waters of the platform removal project area.

Although Ano Nuevo Island has the largest breeding population of Steller (northern) sea lions south of Alaska (Loughlin et al., 1984), the numbers of this species have been declining throughout their range over the last 30-year period. Due to their rapid decline, NMFS on November 6, 1990 listed the Steller sea lion as a threatened species (55 FR 49204) with an effective date of the final rule on December 4, 1990. These sea lions presently breed almost exclusively on offshore rocks to the northwest of Ano Nuevo Island. The Steller sea lion is a summer visitor and no longer breeds in this area. A few adult and sub-adult males are usually present on San Miguel Island and associated rocks in the summer.

The southern sea otter was federally listed as a threatened species under the Endangered Species Act in 1977. The subspecies presently occurs only in nearshore waters along the central California coast between Año Nuevo Point near San Francisco, to the mouth of the Santa Maria River, located about 17.6 km (11 miles) south of Pismo Beach. Numbers of sea otters outside the range are low and no specific locations of preferred use have been identified. Because this population is susceptible to devastation by an oil spill, the U.S. Fish and Wildlife Service began a program in 1987 to transplant up to 250 otters from central California to San Nicholas Island. This program appears not to have been successful.

Wanderers from the established sea otter range have been reported from Cape Mendocino in northern California to Point Loma near San Diego. Numbers of sea otters outside the range are low. Otters have been reported within the platform removal area, but in low numbers. Impacts to sea otters from project operations are anticipated to be less than significant.

Platform-Specific Setting

Offshore Flora and Fauna

1. Avifauna

The most common avifauna observed at the platforms are the western gull (*Carus occidentalis*), cormorants (*Phalacrocorax* spp.), and the brown pelican (*Pelecanus*

occidentalis). These species and others frequently use the crossmembers below deck and the helipad above deck as perching and sunning areas.

2. Fishes

In addition to providing substrate for biofouling communities, the platforms also attract a diverse assemblage of fish species. Studies have been conducted in recent years based on catch results of the Santa Barbara party vessel sport fishery and from diving observations. Results indicate that there are between 16 to 60 times more fish beneath the platforms as compared to adjacent areas (Simpson, 1977). While there is a definite link between platforms and higher fish populations, based on study results, there is considerable variation between platforms on fish species encountered. The primary factors involved in distribution are, predictability, distance from shore, water depth, kelp abundance, and height and surface area of substrate.

According to personal communication with Milton Love (Feb. 1993), the locations with the highest number of fish count per unit of effort (defined as number of fish taken per angler hour) for kelp bass (*Paralabrax clathratus*) in California are at platforms Hilda and Hazel. Results from this study are based on census data collected during a 4-year random party boat survey conducted in the mid-1980's by the California Department of Fish and Game. No other data from this study is available at this time.

In Love and Westphal (1990), catch results from the sportfishing vessel *Hornet* were analyzed. Platforms visited by the *Hornet* were A, B, Hillhouse, Houchin, and Hogan. Each of these are in federal waters contiguous with the 3-mile State water boundary. Results indicated that rockfishes (*Sebastes*, sp.) predominated at all platform sites in both species numbers and abundance, comprising 8 of the 10 most frequently taken species. According to Love's as yet unpublished study, kelp bass, the dominant fish species taken at the much closer to shore Hazel and Hilda, were also present at the outer platforms but in lesser numbers (3.4 percent of total caught) (Table 1.4.1-8). The lower percentage of *P. clathratus* at the outer platforms is probably due to their relatively extreme depth. Hillhouse is located in 192 feet (59 m), below the 46 m maximum depth of *P. clathratus* (Eschmayer, et al., 1983).

Table 1.4.1-8. Fishes Taken by a Sportfishing Party Vessel Around Oil Platforms Near Santa Barbara

Common Name	Species	Total Length (mm)	Number Caught	% Total
Oil Platforms[1]				
Olive rockfish	*Sebastes serranoides*	270.0	831	30.3
Widow rockfish	*Sebastes entomelas*	265.4	420	15.3
Chub mackerel	*Scomber japonicus*	358.3	283	10.3
Canary rockfish	*Sebastes pinniger*	238.8	191	7.0
Brown rockfish	*Sebastes auriculatus*	269.1	193	6.7
Picaccio rockfish	*Sebastes paucipinis*	260.8	147	5.4
Vermillion rockfish	*Sebastes miniatus*	262.1	143	5.2
Blue rockfish	*Sebastes mystinus*	243.0	128	4.7
Kelp bass	*Paralabrax clathratus*	318.5	92	3.4
Squarespot rockfish	*Sebastes hopkinsi*	213.2	60	2.2
Copper rockfish	*Sebastes caurinus*	260.2	60	2.2
Yellowtail rockfish	*Sebastes flavidus*	255.9	59	2.2
Lingcod	*Ophiodon elongatus*	490.2	17	0.6
White croaker	*Genyonemus lineatus*	294.6	16	0.6
Jack mackerel	*Trachurus symmetricus*	226.5	15	0.6
N/A	*Sebastes dalli*	157.1	14	0.5
Halfmoon	*Medialuna californiensis*	259.2	13	0.5
Barred sand bass	*Paralabrax nebulifer*	455.2	12	0.4
Flag rockfish	*Sebastes rubrivinctus*	238.7	12	0.4
Rosy rockfish	*Sebastes rosaceus*	213.4	10	0.4
Starry rockfish	*Sebastes constellatus*	280.0	5	0.2
Pacific bonito	*Sarda chiliensis*	512.5	4	0.2
Pacific sanddab	*Citharichthys sordidus*	208.7	3	0.1
Blacksmith	*Chromis punctipinnis*	290.0	2	0.1
California scorpionfish	*Scorpaena guttata*	219.0	2	0.1
Cabezon	*Scorpaenichthys marmoratus*	362.5	2	0.1
Spiny dogfish	*Squalus acanthias*	989.5	2	0.1
N/A	*Sebastes umbrosus*	147.0	2	0.1
Total			2,728	

All fish surveyed off Santa Barbara aboard the sportfishing party vessel *Hornet*, April 1975-April 1978, around the oil platforms (A. B. Hillhouse, Houchin, and Hogan).

[1] No. trips = 15; No. anglers = 352; No. hours fished = 47.0; Effort = 8,251 angler hours; CPUE = 33 fish per angler hour; H' = 1.03.

Source: Love and Westphal, 1990.

Love and Westphal's results conflict with an earlier study conducted by Simpson in 1976. According to Simpson, the species seemingly most abundant at Hilda and Hazel was the olive rockfish (*Sebastes serranoides*). Study team divers estimated seeing as

many as 4,000 per platform per visit, at depths ranging from surface levels to 80 feet (24 m). Three other species of notable abundance were the white surfperch (*Phanerodon furcatus*), blue rockfish (*S. mystinus*), and brown rockfish (*S. auriculatus*). Members of these species were also found at almost all depths in the water column. With only a few exceptions, all rockfish taken around the platforms were juveniles. A difference in species composition was also noted between the platforms and natural reefs. Much of the differences came from the relative abundance of high-relief substrate-associated rockfish (such as *S. constellatus* and *S. rubrivinctus*) over the reefs and their near absence around the platforms. The substrata around these structures are composed of a mixture of drill cuttings and shells which have broken off the platform pilings. This does not appear to be suitable habitat for many rockfish species (Love, Westphal, 1990).

3. Biofouling Organisms

A single platform in 96-137 feet of water may add 1 to 2 acres of hard substrate. The submerged portion of platforms, or jackets, are covered with biofouling organisms requiring suitable substrate for metamorphosis to adulthood. Over time the jackets support complex invertebrate communities. Shells of primary fouling organisms provide surface of attachment for secondary organisms. These organisms create hiding places for small fish and invertebrates, form the base for a highly complex food chain, and provide excellent breeding grounds (Scarborough-Bull, 1989, Driessen, P., 1989).

In his study of Platforms Hazel and Hilda in 1976, Simpson indicated that the California mussel (*Mytilus californianus*) and various starfishes of the genus Pisaster (P. *andochraceous and* P. *giganteus*) were found at all depths on the platforms and on the cuttings pile below, though they rarely occur at these depths on the rocky coast. In addition, the sizes of the specimens encountered were unusually large. Two studies of other vertical sea structures have revealed similar results: extended depth ranges for several intertidal organisms and unusually large mussels and starfishes (Chan 1973; Paine 1976).

While mussels appeared to dominate the platform fouling communities in terms of total weight, the anemone, *Corynactis californica*, seemed to be the most abundant of the attached animals. Divers estimated that clusters of these anemones covered 70 to 80 percent of the space available on the platforms at depths below 50 feet. Another anemone, *Epicactus prolifera*, was present in great numbers on Hilda but was rarely

seen on Hazel. Divers in this survey reported that this was the only obvious difference in the animal communities of the two structures.

Over 200 invertebrate species were found on or near platforms Hazel and Hilda, including purple sea urchins (*Strongtyocentrotus purpuratus*), hydroids (Fam. *hydrozoa*), nesting clams, rock scallops, and jingle shells (Simpson, 1977). Various crabs and shrimp species were also seen.

4. Benthos

While the cuttings piles beneath the platforms were originally devoid of sea life, shell accumulation provided an uneven substrate surface suitable for further invertebrate life. Invertebrates living on the cutting piles beneath Hazel and Hilda included anemones, crabs, sea cucumbers, and numerous species of starfishes and batstars (Simpson, 1977).

In a study of polychaetes (worms that live on and in the seafloor), grab sampling of bottom sediment near Hazel revealed that the number of species present near the platform was typical for the open coast region. The effect of the platform was to increase the numbers of tube-dwelling worms. Polychaetes near the platform (filter-feeders in particular) may have been benefitting from the continuous "rain" of eggs, waste, and other biological material from the organisms living above them on the platform. Abundant species found within the immediate vicinity of the platform were *Trochochaeta franciscanum* and *Diopatra ornata*.

Onshore Flora and Fauna at Pipeline Landfall

The Hazel and Hilda pipeline landfall consists of predominately rocky intertidal with sandy beach habitat. The intertidal organisms discussed in Offshore Flora and Fauna above, provide a description of organisms likely to be encountered at the pipeline landfall locations.

Offshore Flora and Fauna Impacts

Prior to initiating abandonment operations, a survey will be conducted of the seabed within a 1,000 foot radius of the platforms. All sensitive bottom features, including pipelines, rocky outcrops, and kelp beds will be noted during the survey. These areas will be noted on applicable navigation charts and no anchors will be placed in the areas. Impacts to offshore flora and fauna will be directly related to physical disturbances associated with the

removal of the platform jackets and caissons and with pipeline capping. Physical disturbance of the bottom sediments associated with removal of the structures will directly encompass the area occupied by the structures themselves. As indicated in Section 2.4.5 of the Execution Plan, explosive charges will be utilized for the cutting of anchor piling and conductors on platforms Hope, Heidi, and Hilda. Figure 1.4-1 details the placement of explosive charges for conducting pile cutting operations. Further, the bottom will be disturbed by materials and derrick barge anchors. Please refer to Section 1.1.2.1 of the Project Description for a discussion of typical anchor spreads and placement procedures. The majority of the literature reviewed has been generated about abandonment operations where explosives are used within the confined areas of piles and conductors. Such literature has been generated predominantly from abandonment operations in the Gulf of Mexico.

Jacket Removal: All Platforms

1. Avifauna

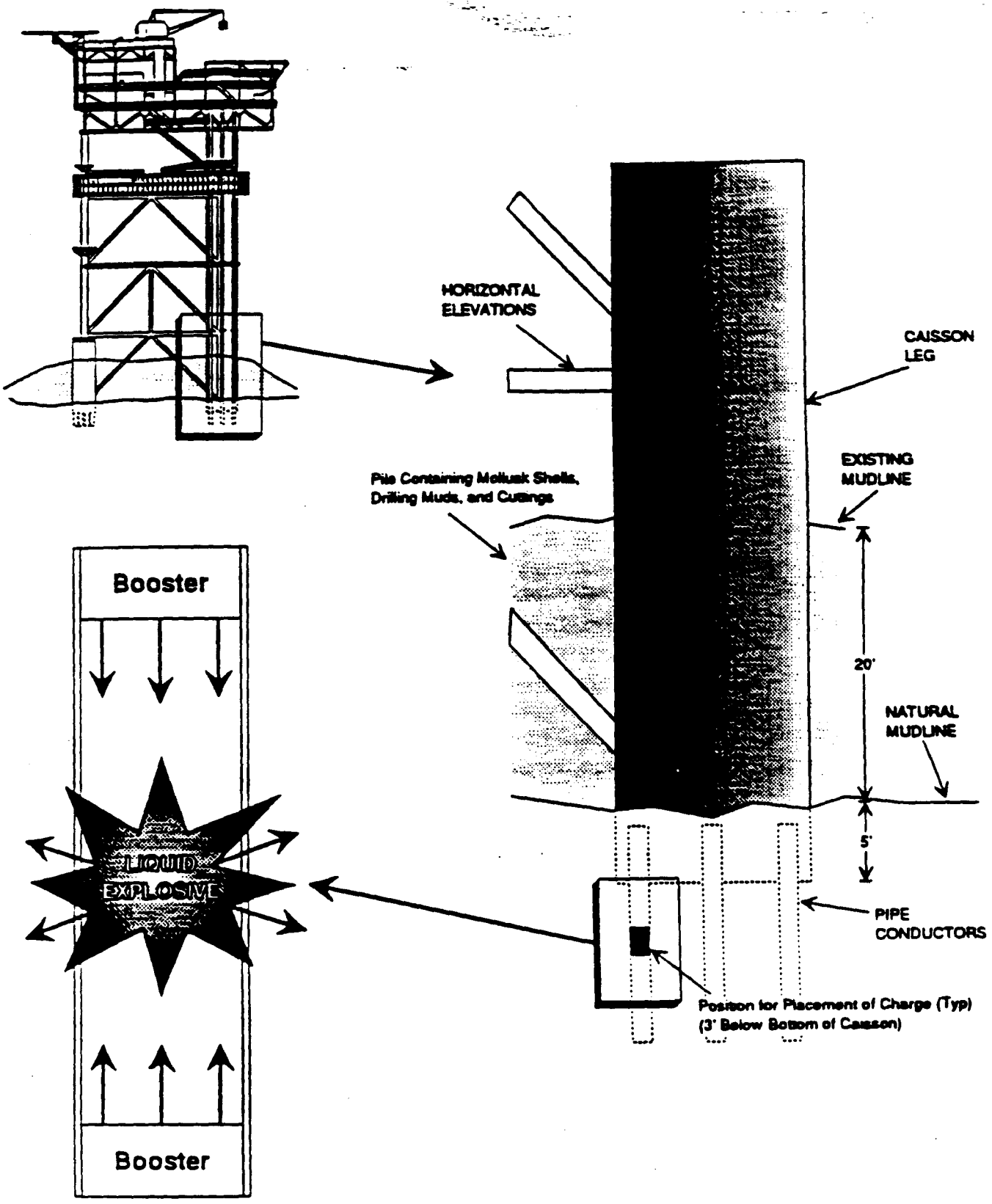
Seabirds are accustomed to perching on and foraging from platforms and are extremely tolerant of human activity. Most seabirds will likely remain at the platforms during most of the platform removal process and will only relocate to other habitat during periods of physical activities at the platform site and upon the complete removal of each platform. Seabirds are highly mobile and are capable of avoiding disturbances in the offshore project area for the duration of the removal activities. Therefore, short-term impacts to seabirds during removal activities would be less than significant.

Long-term impacts would result from loss of perching and foraging habitat. However, the four platforms under study represent only a small portion of the offshore habitat available to seabirds. Removal of this habitat would result in less than significant impacts.

Waterfowl, which normally utilize the waters as resting areas during migratory periods, would easily be able to avoid removal activities. No injuries, mortalities or long-term effects are anticipated.

2. Fishes

- Pelagic Fish. Short-term impacts on pelagic fish located within a several hundred meter radius of the platforms may be significant due to concussive impacts from



DETAIL OF EXPLOSIVE CHARGES
FOR CONDUCTOR/PILE CUTTING OPERATIONS

EXHIBIT PAGE 690
MINUTE PAGE 3304

FIGURE 1.4-1

subsea explosions. Between 32 and 40 individual charges each containing between 25 to 45 pounds of explosive material will be detonated per platform. Explosive cutting operations will be conducted over three to four day periods per platform. Prior studies have indicated that fish remaining in the zone nearby the platforms upon detonation receive impacts which include mortality, perforated air bladders, and lung hemorrhage (Klima, et al., 1989; Baxter, et al., 1982). The exact relationship between fish mortality and distance from charge has not been conclusively determined. The maximum discharge from project explosives will emit less than one fourth the percussive pressure as the sample case because those explosions took place within the water column, while those for this project will be inside the casings and below the mudline. Therefore, the mortality radius will be correspondingly narrower. The explosive impacts will be confined to the immediate area of the platform. Impacts associated with the detonation will be significantly reduced by the fact that the explosives will be set off approximately 8 feet below natural mudline and significantly deeper than the existing mudline within the existing casing. In addition, all detonations will be staggered, which reduces the maximum pressure generated by the explosions (Connor, 1990). Impacts to the overall pelagic fish populations are determined to be less than significant due to factors such as: lack of endangered, threatened, or candidate fish species; relatively small percentage of fish taken by explosive charges (less than 20 fish per charge); and mortality reduction measures incorporated into the project.

As noted in the initial study, a number of measures will be undertaken to avoid impacts to marine mammals. These measures include delaying detonations until no marine mammals are observed within 1,000 yards of the platform. The remaining impact to marine mammals, according to the National Marine Fisheries staff, may reach harassment levels for which a permit may be required. Although impacts to pelagic fish will be minimized through the use of smaller charges detonated on a staggered timetable, there will be an unavoidable "incidental take" of fish located within the immediate zone surrounding the platforms (Goertner, 1981; Goertner, 1982). To reduce the potential of impacting marine birds and mammals attracted to the platform area to feed on fish killed by the explosion, mitigation measures will include the removal of all observed fish, either damaged or killed immediately following detonation operations.

All of the explosives will be detonated below natural mudline inside on the casing. Therefore, discharge will result in short-term, localized turbidity for the 3- to 4-day duration, per platform, from the piling and conductor severing operations. Anchor mooring of materials and derrick barges will also create localized, short-term turbidity impacts. Reduced visibility within the region of the turbidity plumes will force the fish to relocate to undisturbed areas for feeding. As all pelagic fish are extremely mobile, turbidity impacts from removal operations are anticipated to be less than significant. No other short-term project operations will have any measurable impacts to pelagic fish.

Long-term impacts of platform removal would include loss of habitat, foraging grounds, shelter, and support for numerous other forms of marine life. While numerous studies have provided evidence that oil platforms are major pelagic fish attractors, there has been no evidence indicating platforms in shallow waters increase productivity. The removal of the four platforms under study would result in the loss of a portion of the habitat available to pelagic fish within the Santa Barbara Channel. However, pelagic fish are highly mobile and there is an abundance of natural reefs and other platforms within the area that provide similarly suitable habitat. In addition, fish species congregating around the platforms are known to exhibit considerable transiency, as documented by the findings of Simpson (1977) and Love (personal communication, 1993). Therefore, the removal of habitat is projected to have less than significant impacts to the pelagic fish populations in the Santa Barbara Channel.

- Demersal Fish. Short-term platform abandonment and removal procedures will result in impacts similar to those described for pelagic fish. Mortality of individuals will occur within a several hundred meter radius surrounding each platform. Impacts to the overall demersal fish community are anticipated to be less than significant for the same reasons provided for pelagic fish species: lack of endangered, threatened, or candidate fish species; relatively small percentage of fish taken by explosive charges; and mortality reduction measures incorporated into the project.

  Long-term impacts would result in a decrease of prey at former platform locations. However, most demersal fish are able to leave the area once they have been disturbed, such as by suspended sediments, and would most likely be able to find similar habitat. The brief duration of any disturbances along with the small area

impacted should result in insignificant impacts. The localized disturbances on prey items should also have an insignificant impact.

3. Marine Mammals

The primary agents that may impact marine mammals during the 4- to 5-month platform removal period would be percussive impacts from explosives detonations, increases in turbidity, vessel traffic, and noise. While removal operations will be timed to avoid critical cetacean migratory periods, resident pinnipeds are expected to periodically frequent the platforms' vicinities. Physical presence of work boats, barges, and other associated vessels and personnel, however, will likely be a factor in causing most marine mammals to avoid the immediate platform areas. A mitigation monitoring plan is included as Appendix F to ensure implementation of mitigation measures designed to reduce impacts to marine wildlife. The use of a helicopter or surface vessel is considered to be a suitable alternative to observers located on the platform. All vessel operators will be properly briefed on procedures designed to reduce impacts to marine wildlife. In addition to the above factors which will inadvertently serve to protect marine mammals from injury and/or mortality from explosives, the following standardized conditions will be incorporated into project operations:

- An observer located on abandonment vessels will monitor the area prior to, during, and after detonation of charges;
- Detonation will be delayed until any marine mammals observed within 1,000 yards [914 m] are certain to have vacated the area;
- Detonation will only occur during daylight hours to facilitate visual monitoring;
- Pre- and post-detonation surveys by divers, including recovery of any injured or dead fish, which might attract marine mammals, will be conducted; and
- Staggering of detonations will reduce the maximum pressure generated by the explosions.

In addition to the above standardized procedures, the following measure will further reduce the risk of having any marine mammals within mortality or injury range of the platforms during detonation periods:

- A killer whale sonic warning system which emits sounds nearly identical to those emitted by "killer whales" will be placed in the waters near the platforms prior to blasting. The killer whale is a natural predator of pinnipeds and the sounds emitted from the warning system will serve to scare off any pinnipeds in the area.

Under the auspices of the Endangered Species Act, after a threshold examination has been conducted by the appropriate federal agency (USFWS or NMFS) to determine if a "may affect" situation exists, the appropriate Service issues a biological opinion to the requesting agency. If the consultation and biological opinion conclude that the agency action will harm endangered species or offers reasonable and prudent alternatives that would prevent potential harm, the agency may issue an "incidental take statement," which specifies the impact of the take (number of individuals), delineates the reasonable and prudent measures to be taken, and sets forth terms and conditions under which the activity must be conducted (16 U.S.C. 1536(b)(4)). At this point it has been determined that no marine mammals will be injured or killed by this project, but that the use of explosives as described may constitute "harassment," and if so, a permit for which application will be made.

The Marine Mammal Protection Act generally places a moratorium on the taking of any marine mammals, but provides several specific exceptions to the prohibition. The exception relevant to rig removal is found at Section 101(a)(5) of the Act, which allows for the incidental take of small numbers of marine mammals during an activity other than commercial fishing if the proposed take will have a negligible impact on the affected species or stock.

Adherence to the aforementioned standards and procedures should eliminate the risk of injury and/or mortality to all marine mammals. Therefore, under CEQA, the short-term impacts to marine mammals from platform removal are anticipated to be less than significant.

Vessel traffic impacts to marine mammals are discussed in detail in "Offshore Impacts" of Section M, Transportation/Circulation; noise impacts are discussed in "Offshore Impacts" of Section F, Noise. However, these items are also discussed below as they relate to marine mammals in general.

Turbidity resulting from explosives detonation and anchor mooring will result in only minor localized avoidance impacts since coastal marine mammals are normally exposed to some turbid water conditions. Harbor seals and California sea lions may temporarily

seek nearby areas if turbidity hampers their ability to forage. Blue, fin, and humpback whales are sometimes found in deeper, relatively clear pelagic waters and therefore would not be affected by platform removal. As the explosive charge portion of project operations will occur outside the gray whale migration window, gray whales will not be affected by localized turbidity associated with this component. Toothed whales, i.e., Pacific white-sided dolphin, common dolphin, occur in the vicinity of the platform-removal areas but are not likely to be adversely impacted by increased turbidity (Little, 1985).

Dismantlement equipment such as cranes, compressors, welding equipment, barges, and boats would all constitute noise sources that would likely impact cetaceans. Noise can cause impacts to gray whales and other cetaceans. However, only the loudest industrial noises have been reported to affect gray whale behavior (Malme, et al., 1983). Gray whales have acclimated somewhat to human activity since they are commonly observed near urbanized areas of Los Angeles (MMS, 1984) as well as in the Santa Barbara Channel amid boat traffic, production, and exploratory activities. Impacts to gray whales are classified as insignificant.

Noise generated from crew and tug boats, derrick barges, etc., are expected to cause insignificant impacts to pinnipeds. Project-generated boat traffic will be of short duration and barely perceptible above existing levels.

4. Kelp Beds

Prior to initiating abandonment operations, a survey will be conducted of the seabed within a 1,000 foot radius of the platforms. All sensitive bottom features, including piplines, rocky outcrops, and kelp beds will be noted during the survey. These areas will be noted on applicable navigation charts and no anchors will be placed in the areas. In addition, all vessels associated with the project will transit within designated corridors. Abandonment of the platforms will have no impact on the kelp bed community. Kelp beds located several hundred yards inshore of Hazel and Hilda do not rely on the platforms for substrate or protection. Due to water depth, no kelp beds are located nearby Platforms Hope and Heidi. Therefore, jacket removal would have no impact to nearby kelp beds.

5. Plankton

Platform removal will result in elevated turbidity levels which will have little impact on the phytoplankton community; turbidity plumes are not expected to reach the euphotic zone and impact the phytoplankters. Elevated suspended sediment levels in the water column could adversely affect the feeding abilities of zooplankters near the bottom, but the duration would be short and magnitude localized so that impacts would be insignificant. Previous studies have indicated that platform removal will not have a measurable impact.

6. Benthos

- Organisms on Seafloor. Benthic organisms within the immediate region of the conductors, pilings, and external legs will undergo considerable damage and/or mortality as a result of the platform removal operation. Impacts will be greater to these immobile organisms than to mobile organisms able to evacuate the removal area. Impacts to benthic organisms will be less than significant, however, due to the relatively small percentage of overall benthic organisms that will be disturbed from the removal operation.

  As discussed in the Offshore Impacts section of "A. Geology" of the Project Description, the bottom will be disturbed by the anchors of the platform removal derrick barge and materials barges. Anchors are not dragged on the bottom, but will create a disturbance while they are digging in. This activity would disturb and temporarily eliminate epibenthic and infaunal organisms where the anchors and anchor chains contact the seafloor. The number and size of anchor scars depend on several variables, including bottom current speeds, character of bottom sediments, distance along which the anchor is dragged, type of anchor, and method of placement (SLC, 1986). All anchors will be deployed vertically from the barge or from anchor assist vessels (workboats). A correctly placed anchor typically results in a disturbance of about 35 feet (Chambers, 1986). Organisms in the area of the anchor scars would be eliminated and the local bottom topography altered. Organisms recolonizing the anchor scar might differ from those in the surrounding undisturbed benthic community due to differences in sediment character. Localized increases in turbidity would also be caused by the movement. Therefore, impacts to seafloor benthos would be adverse but less than significant.

- Biofouling Organisms on Platform Jackets. Removal of platform caissons, legs, and subsea bracing would disrupt and/or eliminate many benthic invertebrate organisms. Encrusting organisms directly attached to the jacket would, unless incidentally scraped off during platform removal and subsequent transport to land, likely remain attached to the platform indefinitely. Marine growth located on the jacket legs and subsea bracing will be removed with hydroblasting equipment at all cut locations. Removal from water and hydroblasting will result in direct invertebrate mortality. Increased standing crop on platform legs and cross members, used as new substrate for attachment of epibiota, will be lost as the structures are removed. This loss, although resulting in a return to conditions which extended prior to construction, can be considered an adverse but insignificant impact.

  Other encrusting organisms, existing on the accumulation of shells atop the cuttings piles, would likely be damaged by the physical removal of the jackets. Caisson removal would leave open pits on the seafloor and alteration of the cuttings piles would occur. As a result, benthic organisms and other invertebrates on cuttings piles would be eliminated and/or dislodged from their substrate. These impacts would be confined to localized regions. Due to the relative abundance of this resource, no significant impacts will occur.

7. Endangered/Threatened/Candidate Species

Removal of the proposed platform jackets is not anticipated to pose any significant impacts to any endangered, threatened, or candidate species. As indicated above, preventative measures incorporated into the project will serve to reduce impacts to endangered marine mammals to levels of insignificance. The only avian species that would be affected in the long term would be the California brown pelican as they use the platform crossmembers for resting and perching areas. The platforms scheduled for removal, however, comprise only a small portion of the available offshore roosting areas. Therefore, impacts to the California brown pelican will be less than significant. The California gray whale, a federally listed threatened species will not be impacted as the timing of the explosive charge portion of the removal schedule will occur completely outside their migration window, roughly between December and May.

Offshore Pipelines and Cable

1. Avifauna

As discussed in Subsection 1, "Avifauna," seabirds and waterfowl are extremely tolerant of human activity, are highly mobile, and are capable of avoiding disturbances in the offshore project area for the duration of the removal activities. Impacts to avifauna from offshore pipeline and cable abandonment would be less than significant.

2. Fishes

- Pelagic Fish. Impacts to pelagic fish from offshore pipeline and cable abandonment would be less severe than those described for platform jacket removal in that no explosives will be used during this portion of the operations. Due to the highly mobile nature and abundance of habitat of pelagic fish, impacts will be less than significant.

- Demersal Fish. Impacts associated with the abandonment of the offshore portions of the pipelines and cable would be less severe than those described for platform jacket removal in that no explosives will be used during this portion of the operations. Impacts should be insignificant due to the short duration of pipeline abandonment operations and the relatively small area of the soft benthic habitat involved.

3. Marine Mammals

Impacts to marine mammals associated with the abandonment of the offshore portions of the pipelines and cable would be similar, with respect to turbidity and noise, to those described for platform jacket removal. Disturbance of bottom sediment and resuspension of sediments may affect feeding activities of pinnipeds or small cetaceans causing local insignificant impacts (Little, 1985). Impacts to cetaceans and pinnipeds from pipeline abandonment are projected to be short-term and less than significant.

4. Kelp Beds

Abandonment of the offshore portions of the subsea pipelines and cables would have no impact on local kelp bed resources, as described for platform jacket removal

operations. There are no kelp beds within the immediate vicinity of the proposed operations.

5. Plankton

Impacts to phyto- and zooplankton would be similar to those described for platform jacket removal. Due to the short duration and localized magnitude of pipeline and cable abandonment activities, impacts to plankton would be less than significant.

6. Benthos

Impacts to benthic organisms on the seafloor will occur from pipeline/cable separation from platform, capping, and end burial activities. Benthic organisms within the immediate vicinity of the pipeline/cable ends will likely be entrained within the suction of diver held-hand jets. Localized impacts will also occur near the jetting area as displaced bottom sediments settle onto immobile benthic organisms. These impacts will be very localized, short-term and thereby not significant.

7. Endangered/Threatened/Candidate Species

There would be no impacts to any endangered, threatened, or candidate species resulting from the abandonment of the offshore pipelines.

Nearshore Pipeline Abandonment

As the nearshore pipeline will be abandoned in place, there will be no abandonment activities conducted within the nearshore area. Pipeline pigging and flushing operations will be conducted from the platforms. Pipeline grouting will be conducted from the pipeline end at the Carpinteria Plant. Therefore, as no work will actually be conducted in the nearshore area, there will be no impacts to any of the biological resources listed above.

1. Endangered/Threatened/Candidate Species

For reasons described above, nearshore pipeline abandonment activities will not result in any impacts to endangered, threatened, or candidate species.

Unique Marine Environments

The pipeline landfall is located approximately one-third of a mile east of the Carpinteria Reef and Marsh entrance and approximately one-third of a mile west of the Casitas Pier. Each of these three areas are designated Environmentally Sensitive Habitats (ESH).

As the nearshore pipeline will be abandoned in place, there will be no abandonment activities conducted within the Carpinteria Reef or Carpinteria Marsh. Pipeline pigging and flushing operations will be conducted from the platforms, and pipeline grouting will be conducted from the valve box on the bluff. Therefore, project operations will have no impacts to these Environmentally Sensitive Habitats.

The Casitas Pier will continue to be used as a base for support vessel operations during the course of the project. In order to avoid disturbance to the Carpinteria harbor seal colony located east of the Casitas Pier, the following measures which are presently observed will continue to be used during this project:

- Avoid sudden movements and loud noises when on the pier. Limit trips and equipment to the minimum necessary for efficient operations.
- Minimize time spent at the base of the pier and turnaround area. Use the parking areas to meet or drop-off personnel using the pier.
- Use only the main access road exiting the turnaround to the West.
- Demonstrate extra sensitivity at the Casitas Pier during Carpinteria's beach closure for the seal pupping season December 1 through May 31 (City of Carpinteria Ordinance No. 469).

As these measures are already in use at the Casitas Pier, no further mitigations are necessary. Existing operations have utilized the pier without any significant disturbance to the harbor seal colony. Proposed project operations will not result in a major increase in vessel traffic from the pier. Therefore, impacts to unique marine environments and environmentally sensitive habitats are projected to be less than significant.

D. Plant Life

1. Species Diversity

No plant communities are located within the offshore or onshore regions of the project area that would be significantly affected by this project. Therefore, there will not be any significant impacts to terrestrial or aquatic plants within the vicinity of this project.

2. Endangered Species

Offshore - No rare or endangered benthic plants are known to occur within the vicinity of the proposed platform abandonment. This project will not, therefore, result in any significant effects on rare or endangered plants.

Onshore - No onshore or nearshore aquatic flora has been identified as being at risk due to project activities. Therefore, project impacts to onshore flora are projected to be less than significant.

3. Introduction of Plants

By its nature, neither the offshore nor the onshore components of the proposed project would result in the introduction of any new plant species.

4. Agriculture Crops

There are no known onshore agricultural crops that would be impacted in any way by the proposed project.

E. Animal Life

1. Animal Species Diversity

Offshore - Abandonment activities associated with platform and subsea pipeline removal will result in some habitat loss and disturbance to bottom-dwelling fish and other marine animals which utilize these habitats. However, these impacts have been determined to be less than significant due to the abundance of other suitable habitat. Therefore, any loss of or disturbance to any habitat resulting from platform removal and

pipeline abandonment is considered less than significant due to the relatively small percentage of marine organisms impacted and the foregoing.

Onshore - As discussed above, no abandonment activities will be associated with the nearshore portion of the pipelines. It is anticipated that onshore operations will have less than significant impacts to the diversity of local biological resources.

2. Endangered Species

Offshore - As indicated in Subsection 7 and Subsection 1 above, the proposed project will not result in the reduction of the numbers of any unique, rare, or endangered species of animals.

Onshore - As indicated in Subsection 1, the onshore portions of the pipeline abandonment would not result in any impacts to any unique, rare, or endangered species of animals.

3. Introduction of Animals

Neither the offshore nor the onshore portion of this project are anticipated to create any permanent change of habitat which could introduce new species to the area. Upon completion of the project, the area will be restored to its previous state.

4. Habitat Deterioration

Offshore - As indicated in "Jacket Removal" above, impacts of platform removal would include loss of habitat for avifauna, pelagic fish, demersal fish, and marine mammals. However, these organisms are highly mobile and there is an abundance of natural reefs and other platforms within the area that provide similarly suitable habitat. Therefore, impacts of habitat removal for mobile offshore fauna are projected to be less than significant.

As previously described, immobile benthic organisms on the seafloor and bioufouling organisms on platform jackets will undergo considerable damage and/or mortality in localized areas. Impacts to benthic organisms will be less than significant, however, due to the relatively small percentage of overall benthic organisms that will be disturbed by the proposed activities.

F. Noise

Offshore Setting

All wells on the platforms will be plugged and abandoned as a separate project prior to removal of the platforms. Human activity on the platforms is limited to a daily walk-through by personnel to ensure the proper operation of the equipment that is left in service. Current noise-generating sources originating from the platforms consist of air compressors, saltwater pumps, emergency power generators, foghorns, and emergency alarm systems. Until the platforms are physically dismantled these noise-generating sources will remain functional.

Supply/crew boats operate on a continual basis from the Casitas Pier to producing platforms from before dawn to after dark 7 days a week. A harbor seal rookery is located immediately adjacent to the pier. Noise originating from boat traffic, and oil related activities from the pier and on the cliffs have had no visually discernible impacts upon harbor seal breeding, pupping, or hauling out activities.

Onshore Setting

The Carpinteria area adjacent to the two easternmost platforms, Hope and Heidi, has a number of potentially sensitive receptors. Occupied single-family residences exist in the adjacent unincorporated area along Sand Point Road and Del Mar Avenue (known locally as the Sandyland and Sandyland Cove communities, respectively). Carpinteria City Beach and Carpinteria Beach State Park are immediately adjacent to the ocean for approximately 1.6 km (1 mi) in the western part of the City. The westernmost section of Carpinteria adjacent to the City beach is characterized by existing mixed occupancies - predominantly large multi-family dwellings adjacent to the beach, single-family dwellings farther inland, and commercial activities along Linden Avenue (CSA, Inc., 1985).

The nearest onshore receptors to platforms Hazel and Hilda consist of low-density single family residences along Padaro Lane, an unincorporated 1-1/2-mile-long street immediately east of Summerland; approximately 10 houses located on Finney Street in Summerland; and Lookout Park, also in Summerland. All of these receptors are located south of the Southern Pacific Railroad right of way and U.S. Highway 101. Noise generated from U.S. 101 and the Southern Pacific Railroad effectively buffer any platform-generated noise that may otherwise have been detected from noise sensitive receptors in the remainder of Summerland, located north of U.S. 101 and the Southern Pacific Railroad.

With the possible exception of emergency alarms and foghorns, none of the noise generating sources remaining on the platforms are detectable from coastal noise receptors.

Offshore and Onshore Impacts

1. Increase in Existing Noise Levels

Implementation of the proposed project would include the abandonment and removal of four oil and gas platforms. Offshore equipment utilized for project purposes would be the primary noise sources and include tug boats, crew boats, utility vessels, welding equipment, generators, and compressors. Noise would be generated during the mobilization of offshore equipment, pre-abandonment activities, pile and conductor cutting, topside removal, jacket removal, debris removal, site clearance verification, and pipeline abandonment.

Noise level increases will be greatest during the removal of platform topsides, and therefore represent a worst-case scenario. Project platforms will be removed in pairs, with one equipment spread operating at a time. Noise modeling conducted for the proposed project is presented in Tables 1.5.2-1 and 1.5.2-2.

Episodic noise events will occur as a result of explosive detonations used during the jacket removal phase. As indicated in the Impacts to Animal Life section, between 32 and 40 individual charges, each containing between 25 to 45 pounds of explosive material, will be detonated per platform. Explosive cutting operations will be conducted over 3 to 4 days per platform. All detonations will be conducted below natural mudline in approximately 100 feet of water. As the deck packages will be removed prior to explosive detonations, the sound from the subsea detonations will be directed skyward through the conductor and jacket casings. A cement plug inserted above each charge and the earth material surrounding each charge serve to further buffer the noise impacts. The resulting noise level experienced on the surface will be highly muffled. Explosive detonations will occur at least 1 mile from shore; therefore, noise levels at onshore receptors are projected to be scarcely audible. Noise levels from explosive detonations are, therefore, considered to be less than significant.

Currently, a number of residential land uses are situated along the shoreline between Summerland and Carpinteria within proximity to the abandonment and removal project area. Based on noise monitoring conducted by the Chambers Group for the FEIR/EA BEACON Beach Nourishment Demonstration Project (1992), existing noise levels along

the shoreline within these areas average between 60 and 61 dBA. During project abandonment and removal activities, worst-case noise levels due to offshore equipment operations would result in onshore Leqs of between 46 and 48 dBA, and overall CNEL levels of between 56 and 58 dBA. Projected noise levels would be lower than existing ambient conditions and would be generally masked, resulting in less than significant impacts. No sensitive land-based receptors will be exposed to severe noise levels.

With the removal of the platforms, the number of related support vessel trips will be reduced. Such a reduction in trips will reduce noise levels at the Casitas Pier and crew boat travel routes.

2. Exposure to Severe Noise Levels

See #1, above.

Table 1.5.2-1. Noise Prediction Topside Removal Hazel and Hilda

Noise Source	Number of Units	Assumed Use Factor	Max Sound Pressure Level @ 50 Feet (dBA)	Distance (feet)	Noise Level Leq (dBA)
Receptor: shoreline Assumed Attenuation: 6 dBA per doubling of distance					
Tug Boat	6	0.25	90	10032	46
Crew Boat	2	0.2	90	10032	40
Utility Vessel	2	0.2	90	10032	40
Welding Machine	4	0.6	65	10032	23
Generator	4	0.1	76	10032	26
Compressor	4	0.2	81	10032	34
Total Leq Daytime During Normal Operations					48
Measured Daytime Ambient Without Construction					50
Assumed Nighttime Ambient					40
Number of Daytime Hours Operating					12
Number of Nighttime Hours Operating					12
Estimated Ldn or CNEL					56

Note: NA = Not Applicable

SOURCES: EPA (1971), Noise From Construction Equipment and Operations, EPA PB 206 717
Harris, C.M. (1979), Handbook of Noise Control, 2nd. Ed

Table 1.5.2-2. Noise Prediction Topside Removal Hope and Heidi

Noise Source	Number of Units	Assumed Use Factor	Max Sound Pressure Level @ 50 Feet (dBA)	Distance (feet)	Noise Level Leq (dBA)
Receptor: shoreline Assumed Attenuation: 6 dBA per doubling of distance					
Tug Boat	6	0.25	90	10032	44
Crew Boat	2	0.2	90	10032	39
Utility Vessel	2	0.2	90	10032	39
Welding Machine	4	0.6	65	10032	21
Generator	4	0.1	76	10032	25
Compressor	4	0.2	8	10032	33
Total Leq Daytime During Normal Operations					46
Measured Daytime Ambient Without Construction					50
Assumbed Nighttime Ambient					40
Number of Daytime Hours Operating					12
Number of Nighttime Hours Operating					12
Estimated Ldn or CNEL					55

Note: NA = Not Applicable

SOURCES: EPA (1971), Noise From Construction Equipment and Operations, EPA PB 206 717
Harris, C.M. (1979), Handbook of Noise Control, 2nd. Ed

G. Light and Glare

Offshore Setting

As a navigational and operational safety measure, offshore oil platforms are equipped with extremely bright lights. Light emitted from the platforms at night creates the appearance of illuminated stationary ocean vessels. Blinking lights serve as beacons for seagoing vessels and aircraft and can be observed from great distances. At approximately 1.5 nm from shore for Hilda and Hazel, and 2.6 nm for Hope and Heidi, the four offshore platforms proposed for removal constitute four of the five platforms in existence in Santa Barbara County located within the 3-mile State water boundary and are the only ones within State waters visible within the Summerland to Carpinteria region. As such, Hope, Heidi, Hilda and Hazel are presently the most conspicuous nighttime offshore light sources from the Summerland through Carpinteria coastal region.

Onshore Setting

Existing onshore sources of light and glare associated with the project are limited to nighttime lighting at the Casitas Pier and the Carpinteria Plant. Security and safety lights are illuminated at these facilities during nighttime hours.

Offshore Impacts

1. Short-term light and glare impacts at the platforms will result from the presence of offshore equipment on a 24-hour per day basis for a two- to three-month period per two platforms (Hope/Heidi, Hazel/Hilda). Vessels such as derrick barges will be periodically positioned along the structures and will add to the existing light sources for periods of approximately one month per platform. Two materials barges will also be moored in remote locations adjacent to the platforms. All additional vessels and equipment will be brightly lit for navigational safety and for nighttime work purposes. Project-related light and glare in the offshore regions near the platforms will be visible from shore.

   While there will be a visible increase in additional light, the increase will not result in a significant impact due to its distance from shore and the existing amount of other artificial light sources in the Channel. The additional lighting will also reduce the likelihood that other seagoing vessels will collide with the moored barges. Therefore, short-term project-related offshore light and glare is projected to be less than significant.

Long-term light and glare impacts in the Summerland and Carpinteria areas will be reduced upon removal of the project platforms. This net reduction of artificial light sources will result in an environmental enhancement.

Onshore Impacts

The onshore components of the proposed project will not be conducted at night and there will not be substantial glare-emitting sources during daylight operations. Therefore, there will be no onshore light and glare impacts.

H. Land Use

Offshore Setting

Oil and gas exploration and development activities were conducted from the platforms during the period from 1958-92. All hydrocarbon production has ceased and all wells will be permanently abandoned prior to the removal of the platforms.

Onshore Setting

The nearshore areas between Summerland and Carpinteria are characterized as generally low density residential with public access beaches comprising approximately 50 percent of the onshore area located between the two sets of offshore platforms. The unincorporated community of Summerland supports a population of approximately 5,000. The land use mix in this community is approximately 95 percent residential, 4 percent commercial, and 1 percent public facilities (Fire Department and Water District). County-maintained Lookout Park is located on the cliff overlooking Summerland Beach.

Low-density homes line the cliffs immediately east of Summerland along Padaro Lane for approximately 1.5 miles. Padaro Lane thereafter turns into Santa Claus Lane. Land uses along this 0.5-mile stretch include a public beach and a few tourist-serving commercial facilities. Many of the commercial structures along this stretch are presently vacant.

Downcoast of Santa Claus Lane lies the private communities of Sandyland, Sand Point, and Sand Cove. The homes in these communities line the beach fringing El Estero estuary, a State-designated environmentally sensitive habitat. Carpinteria City and State Beaches and the Chevron processing facility and associated pier are located to the south. The City of Carpinteria borders the inland portion of El Estero to the southeast, and is directly inland from the State Beach. With a population of approximately 13,500, Carpinteria (1990 Census) is comprised of mostly residential units, with sizable percentages of commercial, industrial, and agricultural land uses.

South of the Casitas Pier the beach widens and extends approximately 3 miles south to Rincon Point. The Carpinteria Bluffs represent a significant portion of the undeveloped land overlooking this stretch of beach. A handful of light-industrial facilities are located further east toward Rincon.

In addition to Chevron's processing facility at Carpinteria, Mobil's Rincon processing facility is another existing onshore oil and gas processing facility along the Santa Barbara coastline in the vicinity of the project area.

Offshore Impacts

1. The proposed project would represent the permanent removal of offshore structures utilized for oil and gas production. The removal of these structures would return the production areas to a near natural state. Therefore, the proposed project would return the area to those uses which occurred off the coast of Summerland and Carpinteria prior to platform installations.

Onshore Impacts

Onshore components of the proposed project would include nearshore pipeline abandonment. As the pipelines will be abandoned in place, the proposed abandonment operations will not result in any alteration of the present or planned land use of the area.

I. Natural Resources

Regional Offshore Setting

1. Commercial Fishing

In 1986, 390 vessels made up the fishing fleet from Santa Barbara Channel ports. Santa Barbara, Ventura, Oxnard, and Port Hueneme harbored 172, 94, 40, and 84 vessels, respectively (SCB, 1988).

Two California Department of Fish and Game (CDFG) statistical data sets are used to help describe Santa Barbara Channel fisheries and assess impacts: port landings for years 1985 through 1990, and landings assigned to catch blocks for years 1981 through 1990. Annual port landings present a general overview of fish landed in Santa Barbara Channel ports and harbors. Monthly averaged port landings for years 1988 through 1990 are used to determine seasonality of landings and catches.

Santa Barbara Channel fish landings increased significantly from 1985 to 1989 and decreased in 1990. In 1985, landings totaled 35,698,478 pounds, and in 1989 landings totaled 74,589,823 pounds. In 1990, landings declined to 49,839,260 pounds (CDFG 1985). A compilation of the data for the four ports shows that squid was the top, bu. sporadic producer, followed by sea urchin, mackerel, rockfish, shark, tuna, hagfish, anchovy, halibut, prawn, rock crab, swordfish, abalone, white croaker, lobster, sole, sea cucumber, crab claw, white seabass, sablefish, shrimp, thornyhead, and salmon. Total averaged value of these species, in 1990 dollars, is $20,490,341. Santa Barbara accounted for about half of the revenue ($10,285,056) followed by Oxnard ($4,014,647), Ventura ($3,400,339), and Port Hueneme ($2,790,299) (GTC Marine Terminal EIR, 1992).

- Fishing Technologies and Species Taken. The fishing industry of the Santa Barbara Channel is characterized by extreme diversity in both marine resources and vessel/gear type. Although fishermen from the entire West Coast are attracted by the local abundance and variety of marine species, most fishes taken in the Channel are landed in the Ports of Los Angeles (Terminal Island and San Pedro), Port Hueneme, Oxnard, Santa Barbara, Avila, and Morro Bay (GTC Marine Terminal EIR, 1992).

The gear types employed in harvesting the marine resources of the Santa Barbara Channel include: drag nets (trawlers), gill nets (drift and set nets), harpoons, hook-and-line, long line, purse seines, scuba and surface air (hookah diving units) troll gear, and various types of traps.

Drag nets are used in the Santa Barbara Channel to fish for halibut, rockfish, sole, prawn, shrimp, and sea cucumber. Incidental catches of other species are also made, including sablefish (blackcod), shark, and other bottom fishes. CDFG regulations limit dragging to beyond 5 km (2.7 NM) from shore, except for halibut which may be taken to within 1.6 km (0.9 NM) of shore. Shelf and slope areas are fished to depths of about 305 m (1,000 feet). Dragging for prawn and shrimp occurs from Point Conception to Sacate, between El Capitan and Carpinteria, along the north side of the Channel Islands, and over reefs between and west of Platforms Hogan and Grace. Rockfish areas are primarily at the west end of the Channel, and on the south side of San Miguel and Santa Rosa Islands. Dragging for sole is conducted in the eastern end of the Channel and along the north side of the Channel Islands. Halibut dragging occurs between Point Arguello and Point Conception, Sacate and Tajiguas, and Carpinteria and Port Hueneme. Some of the most productive halibut tows are made in the vicinity of PRC 3150, the lease area containing Hope and Heidi (CSA, 1985).

Two types of gill net are used: drift nets and stationary or set gear. Drift nets are regularly used in the Santa Barbara Channel to fish for barracuda, seabass, swordfish, thresher shark, and occasionally bonito. Primary target species are swordfish and thresher shark, which are both pelagic, migratory fishes. Fishing areas generally are located adjacent to shipping lanes between Santa Barbara and Point Conception.

Set gear is fished in relatively shallow nearshore water, within the 55-m depth contour. Target species include barracuda, halibut, seabass, and several varieties of shark. A few years ago, several fisherman also experimented with rock cod gill nets, but this practice has been abandoned within the Channel.

The primary hook-and-line fishery in the Santa Barbara Channel is "drop lining" for red snapper, also known as "rock cod," but scientifically referred to as the Vermilion rockfish (*Sebastes miniatus*). This type of fishing occurs throughout the Channel over the continental shelf particularly near rock piles and some platforms. As noted in recreational fisheries, above, *S. miniatus* is a commonly

taken species by recreational fisherman off of Platform Hope. Fishing spots are located both by visual reference to landmarks and nautical charts, and by electronic means.

Purse seining occurs throughout the Santa Barbara Channel, exclusive of the shipping lanes, for pelagic species such as anchovy, mackerel, and squid. Nearshore areas outside of kelp beds are generally more productive than offshore areas, especially at the western end of the Channel (CSA, 1985).

Almost all commercial abalone diving now occurs south of Point Conception. Abalone are harvested along the mainland coast and around the Channel Islands out to a depth of about 30 m (100 ft). At least six species of abalone are found in the Channel: red, white, black, pink, green, and threaded. Most of the harvest, however, is composed of red, pink, and white abalone. Black abalone are harvested for the Japanese market (CSA, 1985).

Sea urchin are harvested along the mainland coast and around the Channel Islands to depths of about 18 m (60 feet). The large red urchin (*Strongylocentrotus franciscanis*) makes up most of the harvest, although the purple urchin (*S. purpuratus*) is taken as well. Sea urchin has clearly replaced abalone as the overall most valuable commercial shellfish resource in Southern California. Al. but a small fraction of the sea urchin harvest is landed in the port of Santa Barbara (Little, 1985).

Trolling is a variation of hook-and-line technology used by members of the Santa Barbara commercial fishing community to pursue albacore, bonito, salmon, and, until their recent depletion, barracuda. Most salmon trolling within the Channel has traditionally been conducted within 1.6 km (0.9 nm) of shore near the kelp beds between Gaviota and Point Conception. However in recent seasons, significant catches have been made in the nearshore region between Carpinteria and Ventura; this has been the result of an ambitious CDFG program to develop the salmon potential of south coast area habitats, as most streams and rivers emptying into the Santa Barbara Channel were natural salmon spawning areas within the historic period. This unique Southern California salmon run, begun primarily for the benefit of sportsmen, has resulted in substantial commercial benefit for local fishermen, processors, and commercial passenger fishing vessel operators. Albacore and bonito trolling takes place in open water throughout the Channel wherever and whenever these fishes can be found (Little, 1985).

The rock crabs *Cancer anthonyi, C. Antennarius,* and *C. productus* and the spiny lobster *Panulirus interruptus* are trapped in the Santa Barbara Channel. Both crab and lobster traps are placed in shallow water (less than 55 m [180 feet]) along the mainland and at the Channel Islands. Some of the most productive crab and lobster grounds are located in the vicinities of Pitas Point and Gaviota (CSA, 1985). Table 1.8-1 summarizes fishing methods utilized, species taken, and regulated seasons for commercial fisheries in the Santa Barbara Channel.

- Kelp Harvest. Giant kelp (*Macrocystis pyrifera*) has been harvested commercially in California since 1911. Alginates extracted from giant kelp are constituents in a variety of products, namely: as a substitute for agar; as an additive to prevent or retard boiler scale formation; binder for printers ink; a dye vehicle for cloth printing; as stabilizers for cosmetics, dairy products, dentifrices, jams, and paints. Three companies currently lease kelp beds in the Santa Barbara Channel. Although kelp beds are present within the lease areas under study, they are not exploited commercially.

- Mariculture. Fifteen mariculture operations are active in the SBC. The majority of these operations are clustered within the Goleta Point and Santa Barbara Point regions. Other operations extend as far west as Cojo Bay and south to Port Hueneme. The sole mariculture operator in the Summerland/Carpinteria Region is Ecomar, Inc. Under an arrangement with various operators, Ecomar is contracted to maintain the platform's underwater surfaces at a low level of fouling. Under this program, which is an open-ended contract with no cost to the operator, Ecomar harvests between $25,000 and $75,000 worth of bay mussels (*Mytilus edulis*) biannually, per platform (Meek, personal communication, February 1993). The harvest amount varies according to mussel growth patterns and market conditions at the time of harvest.

- Recreational Fishing. Pier, jetty, and shoreline fishing are limited to the mainland coast within the Santa Barbara Channel because access to the Channel Islands is somewhat restricted. Shoreline fishing occurs wherever public access is available, particularly at Summerland Beach, Santa Claus Lane Beach, and Carpinteria State Beach. Recreational fishing from private craft occurs along the coastline as well as around the Channel Islands; fishing activity is generally concentrated in or adjacent to kelp beds. Skin and scuba divers enter the water from shore, private craft, and party boats. Most sport diving occurs in kelp beds or rocky reef areas (CSA, 1985).

Table 1.8.1-1. Commercial Fisheries in the Santa Barbara Channel[1] (SBC)

Fishing Method	Species	Regulated Seasons
Purse Seine	Squid	Year round
	Mackerel	Year round
	Anchovy	Year round
Set Gill Net	Halibut	Year round
	Angel Shark	Year round
	Bonito Shark	Year round
	Rockfish	Year round
	White Croaker	Year round
	Bonito	Year round
	White Seabass	6/16 - 3/14
Drift Gill Net	Swordfish	5/1 - 1/31, coastwide.
	Thresher Shark	Within 75 miles of coast, closed from 5/1 - 5/14, within 25 miles of coast, closed 12/15 - 1/31.
Trap	Crab	Year round
	Hagfish	Year round
	Spot Prawn	Year round
	Lobster	1st Wed. in Oct. - 1st Wed. after 3/15.
Dive	Urchin	Year round, except for weekly and daily restrictions 5/1 - 9/30.
	Abalone	2/1 - 7/31, 9/1 - 12/31.
Trawl	Halibut	CA halibut trawl grounds: 1/16 - 3/15.
	Shrimp	4/1 - 9/30.
	Prawn	Ridgebacks: 10/1 - 5/30; Spots: 2/1 - 10/31.
	Sole	Year round
	Sea Cucumber	Year round
	Shark	Year round
	Rockfish	Year round
	Sablefish	Year round
	Thornyhead	Year round
Troll	Salmon	Generally 4/15 - 9/30
	Albacore	Year round
Hook & Line	Rockfish	Year round
Harpoon	Swordfish	Year round

[1] Gill nets, trap, dive, and trawl are also subject to area restrictions, depending on gear design and species.

Sources: CDFG, 1991 b; SCB, 1988; MBC Applied Environmental Sciences, 1987; Richards, 1991; Fusaro, 1991; Wagner, 1991.

Commercial passenger fishing vessels (party boats) represent a valuable component of the tourism industry of the Santa Barbara Channel communities. Party boat fishing is available from Goleta (1 vessel), Santa Barbara Harbor (5 vessels), Ventura Marina and Channel Island Harbor (7 vessels), Port Hueneme (4 vessels), and Oxnard (14 to 16 vessels). Operators of these crafts and their passengers fish coastal areas from Point Mugu to Point Arguello and around the Channel Islands. Most fishing is conducted within 3 to 5 km (1.6 to 2.7 nm) of shore along the coast, except in the Santa Barbara to Carpinteria area where fishing extends 6.5 to 8 km (3.5 to 4.3 nm) offshore to include several subsea structures and Fourmile Reef (CSA, 1984).

Carpinteria Reef is believed by recreational fishermen to be an extremely sensitive area due to its importance as a spawning ground for California halibut, calico bass, sand bass, and other species. The reef also provides habitat for rare resident populations of white seabass and barracuda. Party boats from the port of Santa Barbara rely on Carpinteria Reef as one of six principal inshore fishing sites. Platforms are also regular stops as part of the normal party boat circuit.

As discussed in Biology, above, 20 to 50 times more fish are located beneath the platforms compared to adjacent soft bottom areas and 5 times as many fish as natural reefs. For this reason, waters surrounding the platforms serve as excellent recreational fishing areas (Simpson, 1977).

Regional Onshore Setting

There are no significant onshore natural resources located in the vicinity of the project area. See Land Use discussion.

Platform-Specific Setting

1. Commercial Fishing

The area seaward from Carpinteria Reef and shoreward from Hope and Heidi is fished by gillnetters and crab and lobster trappers. Approximately 15 to 20 commercial vessels regularly fish the area. It should be noted that no trawling is conducted in the vicinity of any of the platforms. Carpinteria Reef is believed by both commercial and sport fishermen to be a principal habitat and spawning area for several marine species (CSA, 1985).

Lobster trapping occurs shoreward of platforms Hazel and Hilda due to the proximity of some rocky substrate (Blunt, 1980). Gill nets are set, primarily for halibut and white seabass, with occasional rounds/hauls set off shore for mackerel and bonito (Chambers, 1992).

- Mariculture. In addition to mussel harvests, Ecomar has in recent years developed a viable oyster culture industry off of platform Hazel. Cages and nets are suspended from the vertical structure below where the mussels grow, at depths between 30 and 60 feet (9 to 18 m). Oysters are "planted" from these objects and are harvested every 24 months. Revenues from the oyster culture are greater than 50,000 dollars biannually (Meek, personal communication, February 1993). Over the past 10 years approximately 30 percent of Ecomar's revenues have been generated between the four platforms under study (Meek, personal communication, February 1993). Ecomar's contract for mussel/oyster "farming" on the project platforms expired in 1993.

2. Recreational Fishing

Please refer to Biological resources for a discussion of fish taken by recreational fishing operations at the platforms under study.

Platform - Specific Onshore Setting

1. Onshore Recreational Fishing

The discussion for regional onshore recreational fishing located above can be applied to the platform-specific recreational fishing conditions.

Offshore Impacts

Short-Term (Removal/Abandonment Operations)

1. Jacket Removal

- Commercial Fishing. Impacts to commercial fishing from the removal of the project platforms are anticipated to be less than significant. During platform removal operations increased vessel traffic within the platform regions will occur.

However, all vessels will operate within existing traffic corridors, thereby minimizing impacts to fishing operations.

Moored vessels, such as derrick and materials barges will be located within platform vicinities during jacket removal operations. Anchor mooring spreads from these vessels are laterally suspended for a span of approximately 2,000 feet. A several thousand foot radius clear zone would be established around these areas during jacket removal operations to avoid interference. As all of the platforms are located inside of the 5 km (2.7 nm) commercial net dragging restricted zone, there would be no impacts to most commercial net dragging operations. However, drag net trawling for halibut is allowed within the 1.6 km (0.9 nm) contour. The areas surrounding the platforms are avoided for this type of fishing. Restriction from their vicinity during jacket removal operations, therefore, would have no impact to drag net trawling operations.

Set gill nets, also allowed to within 1.6 km (0.9 nm), are used for halibut, angel shark, bonito shark, rockfish, and other demersal fish species. As with drag net trawler, set gill net fishing would be restricted from this zone for the duration of the jacket removal operations. Due to the relatively small percentage of the overall fishery occupied by the abandonment operations, impacts to stationary gill net fishing operations are projected to be less than significant.

Salmon trolling, also conducted within 1.6 km (0.9 nm) of shore between Carpinteria and Ventura would be restricted from the nearshore area near the easternmost platforms, Hope and Heidi. As the regions surrounding the platforms are off limits during normal operations, their restriction during the jacket removal operations would be less than significant.

Other types of fishing operations, such as urchin diving, and crab and lobster trapping would not be impacted from platform jacket removal as the platform areas are not locales ordinarily utilized for these fisheries.

- Recreational Fishing. The presence of abandonment vessels will preclude the use of the waters surrounding the platforms by recreational fishing vessels for the duration of the removal operations. Recreational fishing opportunities will continue, without constraint, following the completion of the project.

2. Offshore Pipeline and Power Cable Abandonment

- Commercial and Recreational Fishing. There will be no impacts to commercial and recreational fishing from offshore pipeline and power cable abandonment operations.

Long Term

1. Jacket Removal

- Commercial Fishing. By allowing access to previously inaccessible areas, the removal of the platform structures is anticipated to have a beneficial impact on the local commercial fishing industry. Once the platforms are removed, it is foreseeable that fishing methods currently practiced in the nearby, nearshore region will expand into the former platform locations. Drag net trawling for halibut, stationery gill netting, and trolling will likely be utilized in the waters formerly occupied by the platforms. Trapping operations will also likely expand into these waters.

- Mariculture. The removal of the four project platforms would have a direct impact on the revenues generated from bay mussel and oyster harvests. Ecomar, the sole harvester of Hope, Heidi, Hazel, and Hilda, grosses approximately $50,000 biannually in oyster revenues, and between $25,000 to $75,000 biannually in bay mussel revenues. Income generated from the project platforms has accounted for approximately 30 percent of Ecomar's historic revenues.

  While the removal of the platforms will diminish the amount of substrate available for mussel harvest, other options exist for oyster cultivation. Oyster-growing hardware attached to Hazel over a 7-year period will be retrieved and a portion of it reused at an alternate location (Meek, personal communication, 1993). Ecomar currently leases a one acre tract near Santa Barbara that will eventually replace the apparatus currently used on Hazel. The subsurface structure will consist of a series of subsurface buoys. Some substrate suitable as mussel habitat will also be included.

- Recreational Fishing. Removal of the project platforms would result in a reduction of the artificial structures around which recreational fishing occurs.

However, these platforms and their subsea artificial reefs represent only a small portion of the habitat available to recreationally sought-after fish. The eastern Santa Barbara Channel is home to numerous other platforms located in a variety of water depths and distances from shore. Further, there are numerous other natural reefs, canyons, ridges, and other subsea land forms that provide suitable habitat for fish. These are all currently utilized by the sport fishing industry. Due to the variety of options available and the belief that the platforms may serve as only fish attractors versus true fish breeding ground habitat, the removal of the project platforms is anticipated to have a less than significant impact on the offshore recreational fishing industry.

2. Offshore Pipeline and Power Cable Abandonment

- Commercial Fishing. Abandonment operations for the offshore portions of the pipelines and power cables would occur within the immediate vicinities of the platforms. No additional mooring spreads or vessel traffic would result from this component. Therefore, impacts to commercial fishing are anticipated to be the same as those described for platform jacket removal.

- Recreational Fishing. Abandonment operations for the offshore portions of the pipelines and power cables would occur within the immediate vicinities of the platforms. No additional mooring spreads or vessel traffic would result from this component. Therefore, impacts to recreational fishing are anticipated to be the same as those described for platform jacket removal.

Onshore Impacts

Short-Term and Long-Term Nearshore Pipeline Abandonment

As the nearshore pipeline will be abandoned in place, there will be no abandonment activities conducted within the nearshore area. Pipeline pigging and flushing operations will be conducted from the platforms. Pipeline grouting will be conducted from the valve box on the cliff. Therefore, as no work will be conducted in the nearshore area, there will not be any impacts to commercial or recreational fishing or to any other natural resources that may occur in the area.

1. Increase in Use

   By its nature, the proposed platform removal/pipeline abandonment program would not entail an increase in the rate of use of any natural resources, nor would it result in a substantial depletion of any nonrenewable resources.

2. Depletion of any Nonrenewable Resources

   See #1. above.

J. Risk of Upset

The following section contains a brief overview of procedures that will be undertaken to avoid upset conditions during platform removal and pipeline abandonment operations. A list of "Critical Operations" and corresponding "Curtailment Measures" are provided in Section 3.0 Critical Operations and Curtailment Plan, and Section 4.0 Oil Spill Contingency, for detailed procedures that will be followed in the event of an emergency situation.

Offshore Setting

The platforms in their existing condition are dormant structures. All wells will be permanently plugged and abandoned prior to platform removal. The platforms also contain storage vessels which previously contained hydrocarbons. These vessels have been emptied and cleaned; however, residual hydrocarbons may still be present in small quantities. Thus, while the risk of an explosion or any other upset conditions is extremely low, the remote potential exists for the release of hazardous substances into the air and/or water column.

Onshore Setting

Pipelines used to transport oil and gas from the platforms are still in place. Landfall for these pipelines are within the immediate vicinity of the Casitas Pier. Residual hydrocarbons are likely to be present within these pipelines to be abandoned.

1.& 2. Offshore and Onshore Impacts

During the course of the proposed platform removal and pipeline abandonment, handling of residual hydrocarbons as well as diesel fuel will occur. Seawater used for the pipeline flushing will be collected and processed through the existing oil/water separators at the Carpinteria facility. The water will then be discharged in accordance with the plant's existing NPDES Permit requirements.

All containment vessels and pipes that have remained operational will be cleaned out as a part of the topside removal phase. Fluids collected during the cleaning operations will be drained into appropriate containers on a work boat and transported to shore for appropriate processing and disposal. In the event of a fire, explosion, hydrocarbon leakage or other hazardous condition, a series of curtailment measures outlined in Chevron's existing Oil Spill Response Plan will be followed. As a result of the procedures listed above, the risk of upset from the proposed platform removal/pipeline abandonment project is anticipated to be less than significant.

K. Population

Offshore and Onshore Setting

The removal of the platforms will not have any impacts on the distribution, density, or growth rate of the population of the area.

Offshore and Onshore Impacts

1. By its short-term nature, the proposal will not result in the alteration, distribution, density, or growth rate of the human population of the area. Any additional hiring that may be required during the course of the project is anticipated to be able to be accommodated by the local industry work force. Therefore, population issues are anticipated to be less than significant.

L. Housing

Offshore and Onshore Setting

The removal of the platforms will not have any impacts on the housing supply of the local or regional area.

Offshore and Onshore Impacts

1. By its short-term nature, the proposal will not result in any additional permanent residents that would create a demand for the construction of new housing. The existing rental housing market in Carpinteria would sufficiently accommodate any temporary workers hired for the proposed project. Impacts to housing, therefore, would be short-term and less than significant.

M. Transportation/Circulation

Offshore Setting

Crew Boat Routes

Offshore transportation presently consists of crew boat trips to and from the platforms. Chevron uses one contracted crew boat, the *Price Tide*, to ferry workers to and from all four platforms. Four other boats run by different operators regularly use the Casitas Pier facility. Including the *Price Tide*, crew boats make between four and 10 runs each for a total of approximately 38 runs per day. The *Price Tide* generally makes 10 runs per day. Chevron has two other contracted boats, the *Wendy Tide* and the *Murdock Tide* that make approximately one run from the Casitas Pier each per week.

Vessel Corridors

Crew boats are assigned designated routes to and from the platform, as shown on Figure 1.12.1-1. These routes have been designed to aid in the prevention of collisions at the approaches to landing facilities and between the platforms and to avoid interference with commercial fishing operations.

Shipping Lanes

All transport of goods within the Santa Barbara Channel is done within designated north and south shipping lanes. The shipping lanes are located in the channel, approximately 13 nm from the Casitas Pier facility. Each shipping lane is 1 nm wide separated by a 2 nm separation zone.

Onshore Setting

Regional Setting

U.S. 101 provides the major north-south link to the Casitas facility within Santa Barbara County. For much of its length through this region U.S. 101 is a four-lane, limited access freeway. However, stretches of five and six lane road with at-grade access exist along its length. A portion of the southbound direction through Carpinteria widens to three lanes, between Bailard Avenue and the Ventura County line.

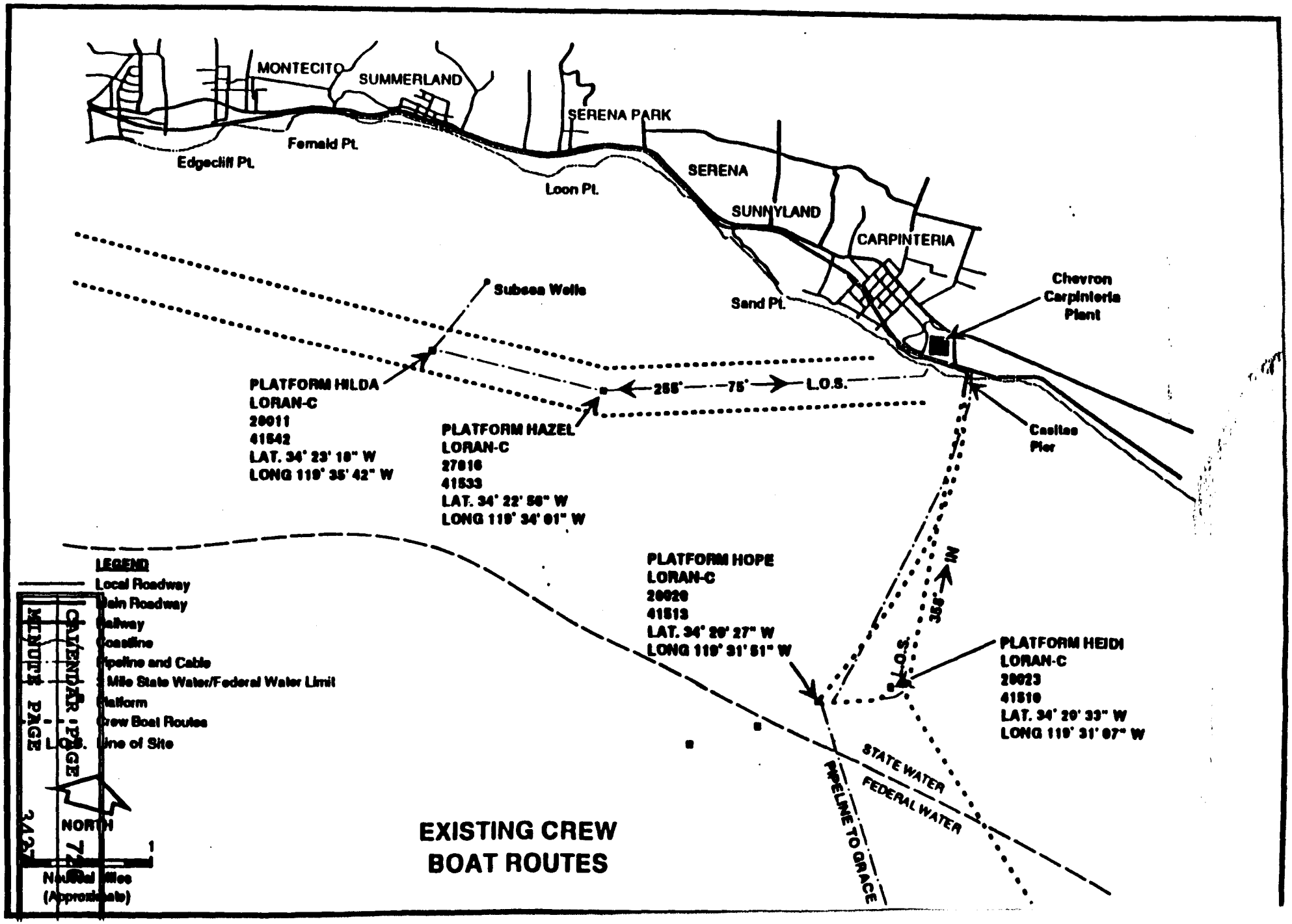


FIGURE 1.12.1-1

Local Roads and Existing Traffic Levels

The Casitas Pier facility entrance is located on east-west trending Carpinteria Avenue in eastern Carpinteria. Access from U.S. 101 is reached from the Casitas Pass exit to the north and by the Bailard Avenue exit to the south. Traffic levels at the key intersections of Carpinteria Avenue at Casitas Pass and Bailard Road are presently Level of Service (LOS) C and A, respectively. The intersection of Casitas Pass Road and U.S. 101 is LOS C for the southbound ramp and B for the northbound ramp. The Bailard Avenue intersection at U.S. 101 is at LOS A-B for the northbound and southbound ramps (ATE Analysis for Circulation Element 1989 Update EIR).

Existing Vehicle Trips at the Casitas Facility

Approximately 115 to 125 employees per day use the Casitas Pier facility. Of these, approximately 10 presently work on the project platforms. Assuming a vehicle ridership of 1.2 persons per vehicle, the Casitas facility probably generates approximately 104 trips per day (a trip is "a single or one-directional vehicle movement with either the origin or destination [exiting or entering] inside a study site") (ITE, 1989). Chevron employees designated specifically to the project platforms probably account for between 15 and 17 trips per day.

Parking Provided at Facility

Parking for the Casitas Pier facility is provided in the form of a combination of a paved parking area and a dirt parking lot with a capacity for 160 cars, located on the bluff adjacent to the pier.

Assumptions and General Approach to Impact Analysis

Preparation of this overview has required certain assumptions to be made relative to worker numbers, number of trips, shift times, commuting patterns, and impact importance. For the onshore portion, potential impacts have been analyzed in terms of changes in Level of Service (LOS) at key intersections of concern. The LOS is estimated in terms of the ratio of the volume of traffic across the intersection of interest to its corresponding capacity.

During the course of the platform removal and pipeline abandonment project approximately 69 additional personnel will be required. During the offshore portions of the project, most of these workers will be stationed offshore on 12-hour work shifts, 7 days per week. The

majority of workers will not sleep offshore. Rather, they will be rotated to and from shore upon completion of their shifts. In order to reduce the total project length, operations will occur 24 hours per day.

1. Vehicular Movement

Offshore Impacts

The majority of sea vessels, such as the derrick barges, materials barges, and tug boats, will be moored at the platforms for the duration of the project. The crew boat and utility/supply boats will typically be making trips between platforms and to and from the Casitas Pier on a continuous basis. It is difficult to estimate how many trips per day the crew boats will make, but they will likely double over the existing amount for the 3- to 4-month duration of the offshore portion of the project. Total time for removal per platform is estimated at 30 days. Most phases of work will occur concurrently on two platforms at a time (Hope and Heidi, Hazel and Hilda). Therefore, total elapsed time for removal of the four platforms will probably be around 120-130 days.

Portions of the dismantled platforms will be ferried to the salvage yard in Long Beach on two materials barges. After the topside of a platform is dismantled and placed on one of the materials barges, that materials barge will begin the 1.5-day journey to Long Beach for offloading. During this period, the platform jacket of the same rig will be placed onto the second materials barge. As the second materials barge heads to Long Beach with the jacket, the first materials barge will be on its way back to the project area. An additional derrick barge may be needed for offloading upon arrival of the loaded materials barges in Long Beach. Upon return of the materials barge, it will re-moor and prepare to accept another platform topside. This process of staggering the loads of the materials barges will be carried out for the duration of the removal operations.

Project-generated offshore vessel traffic is anticipated to have less than significant impacts to Santa Barbara Channel circulation because all crew boat and utility/supply boat transportation will be conducted within the designated crew boat routes. Derrick and materials barges will be utilizing the shipping lanes located in the Channel when travelling to and from the project area. Adherence to these guidelines will ensure that congestion is minimized throughout the duration of project operations. In addition, a notice describing the project's boundaries and potential hazards to navigation will be sent to the U.S. Coast Guard for publication in the Local Notice to Mariners (see Appendix E). These procedures

will ensure that offshore transportation and navigational impacts remain at less than significant levels.

Onshore Impacts

As traffic levels along Carpinteria Avenue near the Casitas Pier facility entrance are low, project-generated traffic is not anticipated to create or add to any congestion impacts. Project vehicular commuting traffic and truck traffic are expected to peak at different times and to have only slight direct interaction. Worker commuter traffic is projected to be highly structured, controlled by the scheduling and duration of work shifts. Due to the long hours of the shifts scheduled for the project, work crew commuter traffic will occur before the AM peak and after the PM peak traffic hours. Other project-generated vehicles such as trucks and equipment operators will enter and exit the Casitas Pier facility at random times. Overall onshore traffic impacts are projected to be less than significant due to the short duration of the project, the random time periods of entrance and exit of most vehicle trips, and the low traffic levels existing within the Carpinteria area.

2. Parking

   All parking for project operations will be accommodated within the existing Casitas Facility parking areas. Therefore, project-generated parking impacts will be less than significant.

3. Transportation System

   See Offshore and Onshore Impacts above.

4. Circulation

   See Offshore and Onshore Impacts above.

5. Traffic

   See Offshore and Onshore Impacts above.

6. Traffic Hazards

   See Offshore and Onshore Impacts above.

N. Public Services

Offshore and Onshore Setting

In the event of an unforeseen accident, services by public agencies are available from the U.S. Coast Guard, the U.S. Environmental Protection Agency, and the California Office of Emergency Services. The role of each of these entities in the event of an emergency are presented in the Emergency Response Plan. Response capabilities from these agencies would be adequate to address any type of emergency condition that could potentially occur. Aside from the potential, limited use of these agencies, the abandoned platforms will not affect any other public services.

Offshore and Onshore Impacts

In the event of an oil spill during the project, the proposed project may affect the availability of local emergency response vehicles/vessels provided by the U.S. Coast Guard (offshore), the U.S. Environmental Protection Agency (onshore), and the California Office of Emergency Services (offshore/onshore). The magnitude of residual oil that may leak from a break in any portions of the offshore or onshore pipelines is anticipated to be extremely small. These agencies would only be required to oversee Chevron's response to contain and dispose of any leakage that may occur. Aside from the potential, limited use of these agencies, the project will not affect any other public services.

1. Fire Protection

   See "Impacts" paragraph above.

2. Police Protection

   See "Impacts" paragraph above.

3. Schools

   See "Impacts" paragraph above.

4. Parks and Recreation Facilities

   See "Impacts" paragraph above.

5. Maintenance of Public Facilities

See "Impacts" paragraph above.

6. Government Services

See "Impacts" paragraph above.

O. Energy

Offshore and Onshore Setting

No significant energy consuming uses are in operation on the platforms and power comes from the existing electrical grid.

Offshore and Onshore Impacts

1. Fuel and Energy Sources

   This oil production platform and pipeline removal/abandonment project is not a long-term energy consuming use. The proposal would not result in a substantial increase in demand upon existing sources of energy or require the development of new sources.

2. Existing Energy Sources

   See #1 above.

P. Utilities

Offshore and Onshore Setting

Existing electricity consumption is not available for each platform. However, the total consumption for Hazel/Hilda and Hope/Heidi are shown below.

Hazel/Hilda	kWh/day
Current Consumption	1,879
Consumption prior to shut-in of Hilda wells (8/92)	2,176
Consumption prior to shut-in of Hazel wells (9/91)	10,382
Hope/Heidi	**kWh/day**
Current Consumption	2,310
Consumption Prior to shut-in of wells	46,182

Offshore and Onshore Impacts

1. Power or Natural Gas

The completion of the project will result in a decrease in utility consumption from current and operational levels. Electricity supply will be severed and consumption will be reduced to zero.

During the platform abandonment project, trash or debris generated offshore will be confined to work vessels in metal trash containers and properly disposed of when the vessels return to port. Trash or debris generated onshore by subcontractors would be properly disposed of offsite by Chevron crews.

Q. Human Health

Offshore and Onshore Setting

The abandoned platforms do not pose a threat to human health. All wells will have been permanently plugged and abandoned prior to the start of the project, thereby reducing the risk of a blowout and/or a hydrogen sulfide leak to nearly zero. All emergency warning systems and lighting are still in place. Exposure of people to platform-related hazards is minimal.

Offshore and Onshore Impacts

1. Health Hazard

   In the event that an oil or diesel leak occurs during project operations, oil spill response equipment will be deployed for immediate cleanup. Potential spill amounts are not anticipated to be great (less than 10 barrels) and would not pose a serious health risk to humans. Measures contained in Chevron's Oil Spill Contingency Plan would mitigate impacts that could result in health impacts from offshore activities. With this mitigation incorporated into the project, it is anticipated that potential health hazards created from offshore activities will be less than significant.

   Since onshore facilities will be abandoned in place, no health hazards will result from the onshore portion of the project.

2. Exposure of People to Health Hazards

   See above.

R. Aesthetics

Offshore and Onshore Setting

The platforms represent man-made obstructions within an otherwise unimpeded view of the Santa Barbara Channel and Channel Islands. While the four platforms in question represent only a portion of the oil platforms located in the Santa Barbara Channel adjacent the Santa Barbara/Summerland/Carpinteria region, they are the closest and most prominent.

Offshore and Onshore Impacts

Removal of the project platforms would result in beneficial aesthetic impacts from all view corridors in which the platforms are currently visible. As Heidi, Hope, Hazel and Hilda are the closest platforms to the Carpinteria and Summerland coastlines, the positive change in the visual character of the local waters will be dramatic.

S. Recreation

Offshore and Onshore Setting

A wide range of active and passive ocean-oriented recreational activities are available in southern Santa Barbara County. Popular beach and ocean activities include swimming, surfing, sunbathing, fishing, camping, biking, ocean viewing, diving, and boating. Section I, Natural Resources, contains a complete discussion of onshore and offshore recreational fishing locations, species taken, and relative abundance.

Principal parks and beaches along the coastline from west to east include Lookout Park, Santa Claus Lane Beach, and Carpinteria City and State Beaches. Present use levels at Santa Barbara County beach areas reflect weekend and holiday use at virtually 100 percent of capacity during the months of April through October (SLC, 1987).

Offshore Impacts

1. Aside from the impacts to the recreational fishing industry, which is discussed earlier in this chapter, Section I, Natural Resources, removal of the project platforms would not have any impact on the quality or quantity of offshore recreational opportunities provided in the region.

Onshore Impacts

As the nearshore segment of the pipelines and power cables will be abandoned in place, there will be no impacts to onshore recreational resources.

T. Cultural Resources

Offshore and Onshore Setting

1. Archaeological Sites

Cultural resources data interpretation for the lease area containing Hope and Heidi (PRC 3150) was performed by McFarlane (1983a). Data quality was judged to be adequate for detecting obvious archaeological resources within the project area.

This area of the Carpinteria offshore shelf is part of a shallow Pleistocene drainage system now filled and covered with a relatively thin veneer of marine sediments over a transgressed erosion surface. Survival of any pretransgressive terriginous soil under marine sediment is unknown.

Hudson (1976) reports a shallow water occurrence of prehistoric artifacts he designates as site "marine-7," located near Carpinteria. This location is only reported; no further scientific surveys or investigations have been conducted.

A beach resort known as Cerca Del Mar, located directly onshore in property presently within the Carpinteria State Beach, featured a pier erected in 1935. This structure, while apparently never finished due to the death of its developer, was popular and heavily used through at least the 1960s (Rouse, 1978). The year of abandonment is unknown. Occasional heavy storm surf exposes rows of piling stubs at this location (Deland, 1985, personal communication, Carpinteria Museum in CSA, 1985).

The project area lies 14.6 km (9 mi) east of the historic Santa Barbara Mission Landing and 26 km (16 mi) northwest of the San Buenaventura Landing. The exact location of the first landing used by local ranches within the Carpinteria Valley vicinity is unclear in the literature. However, a wharf was established just inside the western boundary of the lease tract at La Serena in 1874. This may have previously been a beach landing as well. Called variously Smith's Wharf and Carpinteria Wharf, its date of abandonment is unknown (Rouse, 1980). In 1965, Chevron placed the existing service pier at Casitas Creek.

McFarlane (1983a) reports five watercraft being lost within or near the project area. Four of these are modern smallcraft and are not of cultural significance. A literature search of the Carpinteria Museum of History archives did not provide any additional

information as to the location of the remaining shipwreck. While this wreck and others may exist in the project area, there apparently have not been any major beach wrecks along the tract's shoreline during this century (Candaele, 1985, personal communication, Carpinteria Museum of History).

McFarlane (1983a) lists nine data events of unknown cause as occurring on geophysical survey records. Five are unidentified sonar targets, three are low-gama magnetic anomalies and one event, observed on both systems, is indicated as a "possible boat." None are within 300 m (1,000 ft) of any of the platforms.

Offshore and Onshore Impacts

Removal of the proposed platforms and pipelines is not anticipated to interfere with any of the cultural resources identified above. However, if any vestiges of archaeological remains are encountered during any component of the proposed project, all work will cease until a licensed archaeologist has been consulted.

2. Historic Buildings

   See above.

3. Ethnic Cultural Values

   See above.

4. Religious/Sacred Uses

   See above.

U. Mandatory Findings of Significance

1. Environmental Quality Degradation

There will be a short-term disruption of the marine environment in the immediate platform areas and in barge mooring anchor locations. Upon removal of the platforms, it is anticipated that the natural ocean currents driving littoral sediments will restore the disturbed area back to its natural state. Upon completion of the project, the indigenous marine biota will recolonize and fill any voids created during the platform removal/ pipeline abandonment operations.

2. Short-term vs. Long-term Environmental Goals

The physical removal of the platforms will result in temporary minor impacts to marine biota; however, as the proposed project will remove man-made structures and restore the marine environment to its natural state, it will not create an long-term detrimental effects on the environment.

3. Cumulative Impacts

This platform removal/pipeline abandonment project will result in a decrease of mar caused cumulative impacts by restoring the marine environment to its natural state. This project will create temporary, minor impacts over a period of 120 - 130 days.

4. Adverse effects on Human Beings

This project consists of the removal of four offshore oil platforms. There could be some potential minor impacts to human beings as a result of any oil or diesel spill. Responses are addressed in the Critical Operations and Curtailment Plan and Chevron's existing Oil Spill Contingency Plan. Such potential will cease upon completion of the project.

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Vigil, Tony, Drafter

International Diving Services

Culwell, Andrew, Vice-president, West-Coast Services

6.3 PERSONS CONTACTED

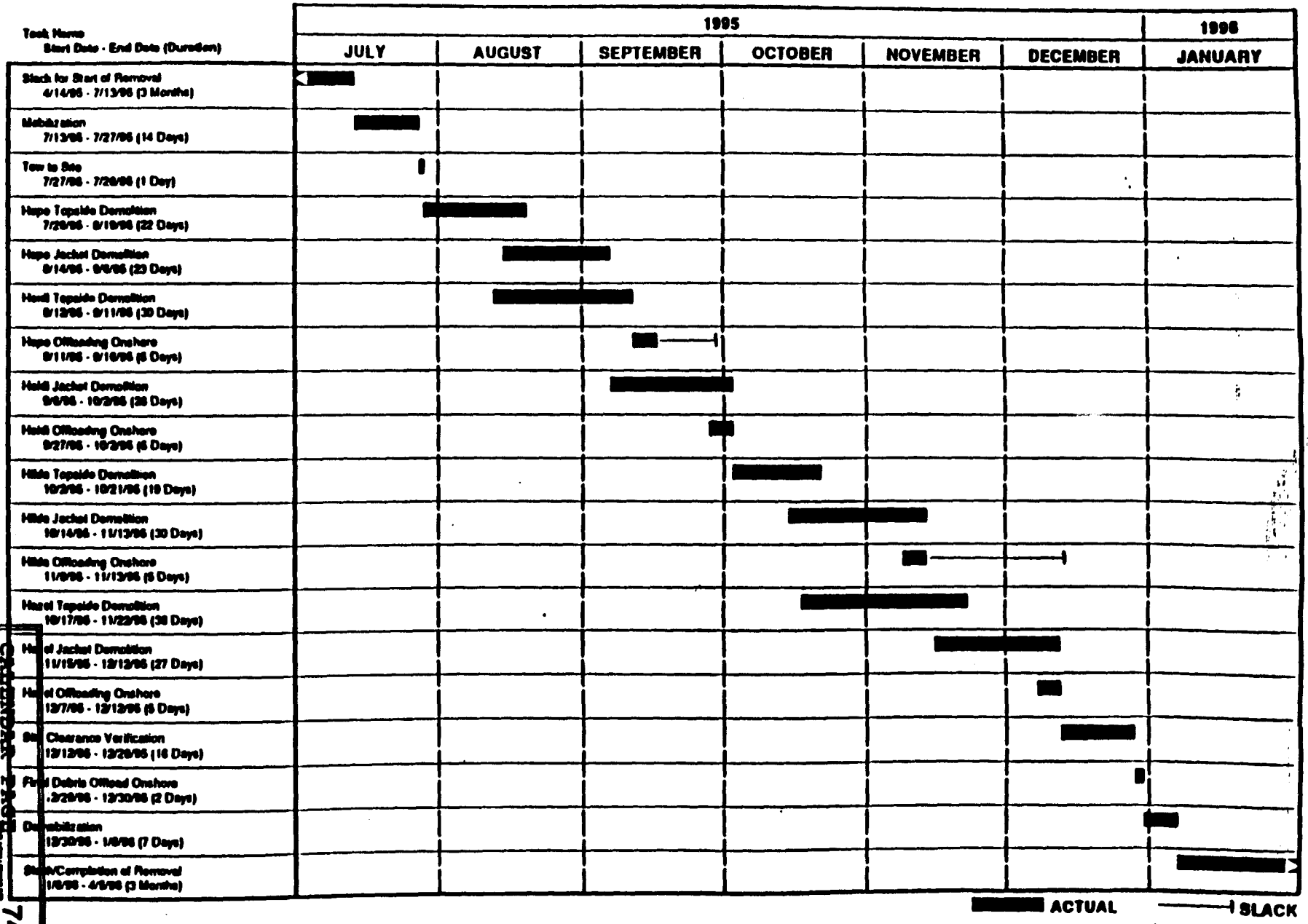
Love, Milton R., Aquatic Biologist, Marine Sciences Department, University of California, Santa Barbara, telephone conversation, February 1993.

Meek, Robert P., Ecomar, Inc., telephone conversation, February 1993.

6.4 AGENCY CONTACTS

Oggins, Cy., California Coastal Commission
Nitsos, Richard California Department of Fish and Game, Environmental Services Division
Welch, Tiffany, U.S. Army Corps of Engineers
Severn, Raymond, City of Carpinteria
Lagomarsino, Irma, National Marine Fisheries Service, Southwest Region
Fusaro, Craig, Joint Oil/Fisheries Liaison Office

APPENDIX A
PROJECT SCHEDULE



CHEVRON STATE PL ORM ABANDONMENTS

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APPENDIX B
AIR QUALITY

TABLE 1 - AIR EMISSIONS CALCULATIONS
MOBILIZATION/DEMOBILIZATION

OPERATION	No.	Duration of Use (Days)	Operating Time (hrs/day)	Usage Factor (Percent)	Power Rating (HP)	Fuel Consumption (gal/hr)	Emission Estimates					
							NOx		ROC		PM-10	
							lbs/day	Total tons	lbs/day	Total tons	lbs/day	Total tons
Mobilization of Removal Equipment /Demobilization (One operation for all platforms)												
Tug Boat	3	4	10	40	3500	39	171.756	0.344	28.080	0.056	19.876	0.040
Tug Boat	1	4	10	40	2000	32	41.754	0.084	7.680	0.015	5.436	0.011
Derrick Barge 50 ton	1	2	10	100		4	23.638	0.024	1.973	0.002	1.699	0.002
- Generator	1	2	10	10	1300	6	3.546	0.004	0.296	0.000	0.255	0.000
- Compressor	1	2	10	20	200	6	7.091	0.007	0.592	0.001	0.510	0.001
Crew Boat	1	2			800							
(idle)			7			4	3.010	0.003	6.975	0.007	1.189	0.001
(cruise)			3			40	20.064	0.020	2.052	0.002	5.096	0.005
Derrick Barge 500 ton	1	7	10	100		4	23.638	0.083	1.973	0.007	1.699	0.006
- Generator	1	7	10	10	1300	12	7.091	0.025	0.592	0.002	0.510	0.002
- Compressor	1	7	10	20	200	6	7.091	0.025	0.592	0.002	0.510	0.002
Utility Vessel	1	2			1800							
(idle)			7			5	14.686	0.015	0.791	0.001	1.486	0.001
(cruise)			3			50	58.755	0.059	2.520	0.003	6.371	0.006
						TOTAL		0.690		0.098		0.077

TABLE 2 - AIR EMISSIONS CALCULATIONS
EMISSIONS PER PLATFORM

OPERATION	No.	Duration of Use (Days)	Operating Time (hrs/day)	Usage Factor (Percent)	Power Rating (HP)	Fuel Consumption (gal/hr)	Emission Estimates					
							NOx		ROC		PM-10	
							lbs/day	Total tons	lbs/day	Total tons	lbs/day	Total tons
Pre-Abandonment												
Survey Vessel	1	2			1200							
(idle)			20			20	148.520	0.149	18.080	0.018	33.976	0.034
(cruise)			4			50	124.620	0.125	3.360	0.003	8.494	0.008
Topside Removal												
Tug Boat	2	21	24	25	3500	39	171.756	1.803	28.080	0.295	19.876	0.209
Tug Boat	1	10	24	25	3500	39	85.878	0.429	14.040	0.070	9.938	0.050
Tug Boat	1	14	24	25	2000	32	62.630	0.438	11.520	0.081	8.154	0.057
Crew Boat	1	21			800							
(idle)			20	•		4	8.600	0.090	19.928	0.209	3.398	0.036
(cruise)			4	•		40	28.752	0.281	2.736	0.029	6.795	0.071
Utility Vessel	1	21			1800							
(idle)			20	•		5	41.960	0.441	2.260	0.024	4.247	0.045
(cruise)			4	•		50	78.340	0.823	3.360	0.035	8.494	0.089
Welding Machine	2	21	24	60	80	12	204.229	2.144	17.045	0.179	14.678	0.154
Derrick Barge 50 ton	1	14	24	100	•	4	56.730	0.397	4.735	0.033	4.077	0.029
- Generator	1	14	24	10	1300	6	8.510	0.060	0.710	0.005	0.612	0.004
- Compressor	1	14	24	20	200	6	17.019	0.119	1.420	0.010	1.223	0.009
Derrick Barge 500 ton	1	10	24	100	•	4	56.730	0.284	4.735	0.024	4.077	0.020
- Generator	1	10	24	10	1300	12	17.019	0.085	1.420	0.007	1.223	0.006
- Compressor	1	10	24	20	200	6	17.019	0.085	1.420	0.007	1.223	0.006
Pile and Conductor Cutter												
Crew Boat	1	16			800							
(idle)			7	•		4	3.010	0.024	6.975	0.056	1.189	0.010
(cruise)			3	•		40	43.200	0.346	2.052	0.016	5.096	0.041
Mechanical Cutter	1	16	10	100	100	15	88.641	0.709	7.398	0.059	6.371	0.051
Jacket Removal												
Tug Boat	3	10	24	25	3500	39	257.634	1.288	42.120	0.211	29.814	0.149
Crew Boat	1	10			800							
(idle)			20	•		4	8.600	0.043	19.928	0.100	3.398	0.017
(cruise)			4	•		40	57.600	0.288	2.736	0.014	6.795	0.034
Dive Support Vessel	1	10			350							
(idle)			23	•		5	11.454	0.057	13.582	0.068	4.884	0.024
(cruise)			1	•		30	8.076	0.040	0.684	0.003	1.274	0.006
Utility Vessel	1	10			1800							
(idle)			20			5	41.960	0.210	2.260	0.011	4.247	0.021
(cruise)			4			50	78.340	0.392	3.360	0.017	8.494	0.042
Welding Machine	2	10	24	60	80	12	204.229	1.021	17.045	0.085	14.678	0.073
Derrick Barge 500 ton	1	10	24	100	•	4	56.730	0.284	4.735	0.024	4.077	0.020
- Generator	1	10	24	10	1300	12	17.019	0.085	1.420	0.007	1.223	0.006
- Compressor	1	10	24	20	200	6	17.019	0.085	1.420	0.007	1.223	0.006

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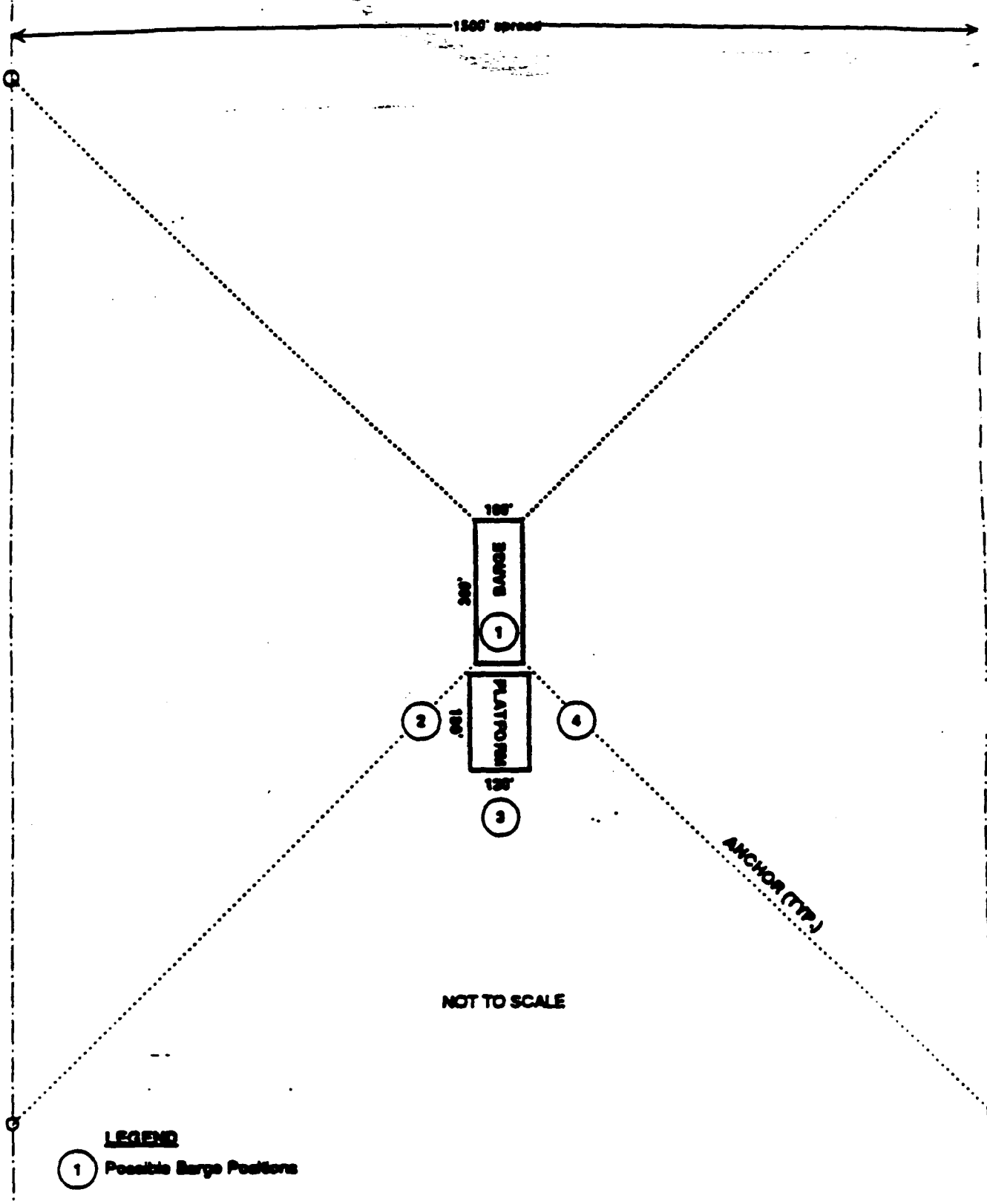
TABLE 2 - AIR EMISSIONS CALCULATIONS (Continued)
EMISSIONS PER PLATFORM

OPERATION	No.	Duration of Use (Days)	Operating Time (hrs/day)	Usage Factor (Percent)	Power Rating (HP)	Fuel Consumption (gal/hr)	Emission Estimates					
							NOx		ROC		PM-10	
							lbs/day	Total tons	lbs/day	Total tons	lbs/day	Total tons
Transport to LB&A												
Tug Boat	1	4	24	100	3500	39	343.512	0.687	56.160	0.112	39.752	0.080
Debris Removal												
Tug Boat	1	5	10	25	3500	39	35.783	0.089	5.850	0.015	4.141	0.010
Tug Boat	1	5	10	25	2000	32	26.096	0.065	4.800	0.012	3.398	0.008
Derrick Barge 50 ton	1	5	10	100		4						
- Generator	1	5	10	10	1300	6	3.548	0.009	0.298	0.001	0.255	0.001
- Compressor	1	5	10	20	200	6	7.091	0.018	0.592	0.001	0.510	0.001
Crew Boat	1	5			800							
(idle)			7			4	3.010	0.008	6.975	0.017	1.189	0.003
(cruise)			3			40	43.200	0.108	2.052	0.005	5.096	0.013
Site Clearance Verification												
Tug Boat	1	2	10	40	1000	25	37.130	0.037	6.000	0.006	4.247	0.004
Dive Support Vessel	1	2			350							
(idle)			7			5	3.486	0.003	4.134	0.004	1.486	0.001
(cruise)			3			30	24.228	0.024	2.052	0.002	3.822	0.004
Utility Vessel	2	2			1800							
(idle)			7			5	29.372	0.029	1.582	0.002	2.973	0.003
(cruise)			3			50	117.510	0.118	5.040	0.005	12.741	0.013
Crew Boat	1	2			800							
(idle)			7			4	3.010	0.003	6.975	0.007	1.189	0.001
(cruise)			3			40	43.200	0.043	2.052	0.002	5.096	0.005
Survey Vessel	1	2			1200							
(idle)			20			20	148.520	0.149	9.040	0.009	16.986	0.017
(cruise)			4			50	124.620	0.125	3.360	0.003	8.494	0.008
Pipeline Abandonment												
Tug Boat	1	2	10	40	2000	32	46.976	0.047	7.680	0.008	5.436	0.005
Crew Boat	1	2			800							
(idle)			7			4	3.010	0.003	6.975	0.007	1.189	0.001
(cruise)			3			40	43.200	0.043	2.052	0.002	5.096	0.005
						TOTAL		14.233		1.928		1.513
						TOTAL PER PLATFORM WITH MOB/DEMOB		14.923		2.025		1.590
						TOTAL FOR TWO PLATFORMS		29.156		3.953		3.103
						TOTAL FOR FOUR PLATFORMS		57.622		7.808		6.130

APPENDIX C
ANCHOR PLAN

The following anchor plan diagram is provided as an example of a typical barge mooring spread. In order to avoid damage to subsea pipelines, cable, and sensitive bottom habitat, the seafloor will be surveyed prior to anchor laying.



TYPICAL PLATFORM REMOVAL
BARGE MOORING SPREAD

APPENDIX D
EMERGENCY CONTACT LIST

APPENDIX D
EMERGENCY CONTACT LIST

In the event of an emergency situation during abandonment operations, the following agencies will be notified.

Company Notifications	
Senior Land Representative Lee Bafalon (805) 658-4345	Operations Manager Gary Gray, Abandonment Team Leader (805) 658-4360 Greg Sinclair (805) 658-4394 Mike Jennings (805) 658-4458
Required Government Agency Notification	
U.S. Coast Guard National Command Center 2100 2nd Street Southwest, Room 2611 Washington, D.C. 20593 (800) 424-8802 Marine Safety Office 165 North Pico Avenue Long Beach, CA 90802-1096 (213) 499-5555	State of California Office of Emergency Services 2800 Meadowview Road Sacramento, CA 95832 (800) 852-7550 State Lands Commission District Office 200 Oceangate, 12th Floor Long Beach, CA 90802 (310) 590-5201
Government Agency Notification	
Federal U.S. Department of Transportation Information Resource Manager Office of Pipeline Safety Washington, D.C. 20590 Ed Ondak Western Regional Office Lakewood, CO (303) 236-3424 (24-hour) U.S. Department of Interior National Park Service Channel Islands National Park 1901 Spinnaker Drive Ventura, CA 93001	U.S. Army Corps of Engineers Ventura Regulatory Office 2151 Alessandro Drive, Suite 100 Ventura, CA 93001 (805) 641-1121 U.S. Fish and Wildlife Service Field Supervisor, Ecological Services Federal Building, 2400 Avila Road Laguna Niguel, CA 92677 Environmental Protection Agency Region IX 215 Fremont San Francisco, CA 94105

Government Agency Notification (Continued)	
<u>State</u> Division of Oil and Gas District Office 5075 South Bradley Road, Suite 221 Santa Maria, CA 93455 (805) 937-7246 Regional Water Quality Control Board Regional Office 107 South Broadway, Room 4027 Los Angeles, CA 90012 California Department of Parks and Recreation Channel Coast District 24 East Main Street Ventura, CA 93001 Office of State Fire Marshall Pipeline Safety Division (818) 337-9999 (916) 427-4500	California Coastal Commission 925 De la Vina Street Santa Barbara, CA 93101 (805) 963-6871 45 Freemont Street, Suite 2000 San Francisco, CA 94105 (415) 904-5200 Department of Fish and Game Oil Spill Prevention and Response (OSPR) 1700 K Street, Suite 250 Sacramento, CA 94244-2090 (916) 445-0045 (between 6 A.M. and 10 P.M.)
<u>Santa Barbara County</u> County of Santa Barbara Resource Management Department Energy Division 1226 Anacapa Street, Suite 2 Santa Barbara, CA 93101	

APPENDIX E

LOCAL NOTICE TO MARINERS

The notice describing the project's offshore boundaries and hazards to navigation will be sent to the U.S. Coast Guard for publication in the Local Notice to Mariners prior to the start of the proposed project.

APPENDIX F
MITIGATION MONITORING PLAN

EXHIBIT "C"
MITIGATION MONITORING PROGRAM
FOR THE OFFSHORE OIL PLATFORM ABANDONMENT AND REMOVAL IN THE SANTA BARBARA CHANNEL - CHEVRON PROJECT

OFFSHORE MONITORING

1. Impact: The proposed project may create hazards to navigation caused by the temporary presence of marine equipment offshore.

   Project Mitigation:

   a) The mooring system of the derrick barge will be marked as orange rubber crown buoys. These markers will delineate the mooring spread.

   b) All platforms are presently well lit. The lights will be moved to the legs once the platform decks have been removed.

   c) Chevron will file a Local Notice to Mariners with the U.S. Coast Guard which will specify the project boundaries, hazards to navigators, and call signs.

   d) All marine vessels utilized in the removal/abandonment operations will use designated vessel traffic corridors and shipping lanes to avoid collisions with other vessels. The crew boats transporting personnel will be using these traffic corridors.

   Monitoring:

   Staff of the State Lands Commission, while inspecting offshore operations, will periodically monitor the project to assure that the marked orange rubber crowned buoys are in place, the vessels are well lit and highly visible at night, and the Local Notice to Mariners has been filed. Additionally, staff will visually observe the local vessel traffic to assure that the project is in compliance.

2. Impact: This proposed project may result in unsafe working conditions if allowed to operate during rough inclement weather when unsafe sea states occur.

Project Mitigation:

a) The final determination for shutdown of operations will be made by the barge superintendent or vessel captain in conjunction with the removal contractor project manager.

b) The barge superintendent or vessel captain will resume operations when unsafe sea state subside.

Monitoring:

Staff of the State Lands Commission while conducting periodic project inspections, will monitor the project to assure that the shutdown procedures are initiated in the event of unsafe seas, as determined by the barge superintendent or vessel captain.

3. Impact: The proposed project may produce noises from equipment.

Project Mitigation:

a) All equipment will be muffled in compliance with local standards.

Monitoring:

Staff of the State Lands Commission will monitor both onshore and offshore operations and inspect equipment to assure engines are covered and mufflers are in good repair.

4. Impact: This project may produce trash or debris generated by removal crews.

Project Mitigation:

a) Trash and debris generated offshore will be confined to the platforms and moved to the barges in metal trash containers and properly disposed of when the vessel returns to port.

Monitoring:

Staff of the State Lands Commission will periodically visually monitor both onshore and offshore projects to assure that all trash, debris, food containers, etc., generated by the project and the abandonment crews are policed and properly disposed.

5. Impact: Debris may have accumulated on the ocean bottom during the operations of the platforms or from the dismantling operations.

Project Mitigation:

a) Verification of site clearance will be performed as part of the final debris recovery operation utilizing a side scan sonar survey.

b) Suspect targets or debris will be plotted for target verification survey which will be plotted for recovery.

c) Any debris located will be recovered by divers to complete the site clearance verification. Test trawls over the site of the abandoned platforms will be conducted in areas where trawling is legal.

Monitoring:

Staff of the State Lands Commission will periodically visually monitor the site clearance operations and will check the side-scan sonar records.

6. Impact: The oil and gas pipelines for Platform Grace could be damaged during the removal operations of Platform Hope.

Project Mitigation:

a) To prevent damage to the oil and gas pipelines from Platform Grace, no heavy lifts will be made over the pipelines during the removal of Platform Hope.

b) Any lift where safe resetting of the package may be difficult, will be engineered with guidelines installed to control the package movement horizontally for approximately 2 feet of vertical movement.

Monitoring:

Staff of the State Lands Commission will periodically visually monitor the deck removal operations, where difficult lifts may be anticipated, to assure all appropriate safety measures are being employed.

7. Impact Where underwater explosives are used, there will be some mortality among the pelagic and demersal fish within about 100 meters of the detonation point. Additionally, untrained personnel and improperly handling and storage of explosives can result in accidental explosions.

Project Mitigation:

a) Use of explosives will be conducted in accordance with all laws and regulations regarding such activity.

b) A licensed State of California blasting supervisor will direct the work, and will coordinate the clearance of the site prior to making a shot.

c) Explosives will be stored in a safe manner and in well-marked containers. Nitromethane will be used as the main charge, and is not classed as an explosive when stored prior to mixing.

d) Platform removal operations will be timed to avoid critical cetacean migratory periods.

e) Observers located on the abandonment support vessels will monitor the area prior to, during, and after detonation of charges; detonation of charges will be delayed until all marine mammals observed in the area (within 1,000 yards [914 m] are certain to have vacated; detonation will only occur during daylight hours to facilitate visual monitoring; pre and post-detonation surveys by divers, including recovery of any injured or dead fish will be conducted immediately after detonation; and implementation of staggering of detonations which will reduce the maximum pressure generated by the explosions.

d) A killer whale sonic warning system which emits sounds nearly identical to those emitted by "killer whales" will be placed in the waters near the platforms prior to blasting.

Monitoring:

Staff of the State Lands Commission will periodically visually monitor the storage of explosives, detonation monitoring procedures, and the detonation phase of operations to assure all safety mitigation measures described above are being employed.

8. Impact: During the removal of the oil platforms there is always the possibility of a small operational spill from fuel transfers or accidental leaks.

Project Mitigation:

a) Procedures for major and minor spill events are outlined in Chevron's Oil Spill Contingency Plan for State Leases.

b) Should the spill exceed the capacity of the onsite equipment and personnel, additional resources are available through Chevron's local oil spill response organization and Clean Seas Oil Spill Cooperative.

Monitoring:

Staff of the State Lands Commission will be familiar with Chevron's Oil Spill Contingency Plan for State Leases. Staff will periodically visually monitor the removal phase of operations to assure all safety and environment mitigation measures described above are being employed.

9. Impact: There will be emissions created during the abandonment and removal of the four offshore oil and gas platforms.

Project Mitigation:

a) Emissions would be reduced by utilizing the following Santa Barbara County APCD standard measures which are included in the 1991 Air Quality Attainment Plan (AQAP) as control measures N-IC-7:

- Equipment shall be maintained as per manufacturer's specifications;
- Catalytic converters shall be installed on all gasoline-powered equipment (if applicable);
- The fuel injection timing shall be retarded on all gasoline-powered equipment by two (2) degrees from manufacturers recommendations;
- Gasoline-powered equipment shall be substituted for diesel-powered equipment, if feasible;
- Direct injection diesel engines (i.e., Caterpillar D399 of equivalent) shall be used if available;
- Turbocharged diesel engines with inter cooling shall be used if available; and
- Reformulated diesel fuel and high pressure injectors shall be used in all diesel-powered removal and abandonment equipment.

Monitoring:

Staff will be familiar with the Santa Barbara County Air Pollution Control District (APCD) standard measures which are included in the 1991 Air Quality Attainment Plan (AQAP) as control measures N-IC-7 stated above. Staff will periodically visually monitor the removal phase of operations to assure the standard measures stated above are being employed.

10. Impact: There are known kelp beds and hard-bottom areas in the vicinity of the platforms which could be impacted during the deployment of anchors. When the anchors are removed, seafloor scarring may be in excess of prescribed limits.

Project Mitigation:

a) There will be a pre- and post-project surveys conducted within a 1,000 foot radius of the platforms.

1) The pre-operations survey will note all sensitive bottom features, including pipelines, rocky outcrops, and kelp beds observed during the survey. These areas will be noted on applicable navigation charts and no anchors will be placed in these areas.

2) The post-operations project survey will note all anchor scars and record any additional debris to be removed. Any anchor scars exceeding prescribed coastal commission limits will be leveled.

Monitoring:

Staff of the State Lands Commission will periodically monitor the pre- and post-survey operators to ensure proper implementation. Survey reports will be reviewed for completeness and accuracy. Anchor deployment locations will be monitored to ensure compliance.

EXHIBIT "C"

REMOVAL OF OFFSHORE OIL PLATFORMS
HEIDI, HILDA, HOPE AND HAZEL (Project)

The following stipulations are incorporated into the Project:

1. Prior to the start of the Project, Chevron shall verify in writing to the SLC that all personnel involved in the offshore phases of the Project have completed the Western States Petroleum Association Fisheries Training Program.

2. Chevron will employ "independent observers" to monitor the affected areas for marine mammals prior, during, and after the use of explosives during the cutting of platform piles and conductors. Such observers will be hired from a list provided by the California Department of Fish and Game (DFG). A list of the observers retained shall be provided to the SLC and the DFG prior to the start of the Project.

3. Following the completion of the jacket removal operations for the first platform, Platform Hope under the Project schedule currently on file with the SLC, and before the start of jacket removal operations for the next platform (Platform Heidi), Chevron and the contractor shall meet and confer with the SLC and the Responsible Agencies as defined by the CEQA to evaluate the effectiveness of the procedures and mitigation measures in place for the Project. Chevron shall subsequently proceed with the Project as directed by the SLC. The need for a similar meeting following the removal of Platform Heidi shall be determined by the SLC in consultation with Chevron, the contractor and the Responsible Agencies.

4. The derrick and transport barges that are to be used for the removal of Platform Hope shall not be positioned on the east side of the Platform, i.e. the side on which the pipelines are to remain to service Platforms Grace and Gail in the federal OCS.

5. Within 10 working days of the completion of the project, Chevron shall submit a "trawl plan" (Plan) to the SLC for its approval. Such Plan shall provide for test trawls over the debris clearance area at each platform location, specifically the area within a 1,000 foot radius from each platform. Such Plan shall also provide for the use of conventional trawling gear, i.e., gear without modifications that would allow it to clear seafloor obstructions, comparable to that which would be used by commercial fishermen in the region. The SLC will review such Plan in consultation with the Joint Oil/Fisheries Liaison Office. Chevron shall proceed with the test trawls within thirty (30) days of receiving notification of SLC approval of the Plan and shall notify the SLC upon the successful conclusion of the trawls.

6. All pipelines, cables, and structures abandoned in place in the offshore will be surveyed with an ROV or high resolution side scan sonar to verify that such pipelines and appurtenances buried at the time of abandonment remain buried and that such pipelines and appurtenances that are permitted to remain exposed continue to remain free of excessive spanning or do not present any other potential interference to commercial fishing operations. The beach and surfzone area, within 1,000 feet of the Mean Low Tide Line, through which the pipelines associated with Platform Hazel pass, shall be visually inspected by a diver.

Such surveys shall be conducted: 1) within 30 days following completion of the project; 2) one year thereafter; and 3) upon review of the one-year survey, a determination will be made to schedule a subsequent annual survey or to schedule a survey at a subsequent interval to be determined by SLC staff based on the results of the one year survey. The details of each post-construction survey plan will be submitted to the SLC for review and approval of scope and content prior to the conduct of each survey.

Within 60 days of the completion of each survey, Chevron shall submit a report to the SLC which describes the status of the abandoned facilities.

7. If in the future any portion of a platform related structure or pipeline abandoned in place becomes exposed, Chevron shall, within 90 days of being notified, identify the nature of the exposed material and submit one of the following to the SLC for its review and approval:

   a) with respect to the caisson(s) of Platform Hazel, a plan to reduce or eliminate potential conflicts with commercial fishing activities;

   b) with respect to an offshore section of a pipeline and its appurtenances, a remediation plan which shall contain an alternative removal procedure; and

   c) with respect to the beach and shorezone area described in Stipulation 6, a removal plan.

   Upon approval by the SLC, Chevron shall implement the submitted plan on a schedule and in the manner specified by the SLC.

EXHIBIT "D"

FINAL MITIGATION MONITORING PROGRAM FOR THE OFFSHORE OIL PLATFORM ABANDONMENT AND REMOVAL IN THE SANTA BARBARA CHANNEL - CHEVRON PROJECT

OFFSHORE MONITORING

1. Impact: The proposed project may create hazards to navigation caused by the temporary presence of marine equipment offshore.

Project Mitigation:

a) The mooring system of the derrick barge will be marked as orange rubber crown buoys. These markers will delineate the mooring spread.

b) All platforms are presently well lit. The lights will be moved to the legs once the platform decks have been removed.

c) The contractor will file a Local Notice to Mariners with the U.S. Coast Guard which will specify the project boundaries, hazards to navigators, and call signs. Copies of said Notice shall also be provided to the Joint Oil/Fisheries Liaison Office and posted in the offices of the Harbor Master at Santa Barbara, Morro Bay, Port Hueneme, Ventura, Los Angeles, and Long Beach Harbors.

d) All marine vessels utilized in the removal/abandonment operations will use designated vessel traffic corridors and shipping lanes. The crew boats transporting personnel will also utilize such traffic corridors.

Monitoring:

Staff of the State Lands Commission, while inspecting offshore operations, will periodically monitor the project to assure that the marked orange rubber crowned buoys are in place, the vessels are well lit and highly visible at night, and the Local Notice to Mariners has been filed. Additionally, staff will observe the local vessel traffic to assure that the project is in compliance.

2. Impact: This proposed project may result in unsafe working conditions if allowed to operate during rough inclement weather when unsafe sea states occur.

Project Mitigation:

a) The final determination for shutdown of operations will be made by the barge superintendent or vessel captain in conjunction with the removal contractor project manager.

b) The barge superintendent or vessel captain will resume operations when the unsafe sea state is no longer present.

Monitoring:

Staff of the Staff Lands Commission, while conducting periodic project inspections, will monitor the project to assure that the shutdown procedures are initiated in the event of unsafe sea states as determined by the barge superintendent or vessel captain.

3. Impact: This project may produce trash or debris generated by the contractor's crews or subcontractors.

Project Mitigation:

a) Trash and debris generated offshore will be confined to the platforms and moved to the barges in metal trash containers and properly disposed of when the vessel returns to Port.

b) The contractor and subcontractors shall maintain a log of all tools, equipment of other debris that are accidently dropped into the water during the course of demolition operations. The log, a copy of which is to be submitted to the SLC, will record the date, time, a description of the item, and approximate location to facilitate diver recovery during final site clearance.

Monitoring:

Staff of the State Lands Commission will periodically monitor both onshore and offshore projects to assure that all trash, debris, food containers, etc. generated by the project and the contractor's crews are policed and properly disposed.

4. Impact: Debris may have accumulated on the ocean bottom during the operations of the platforms or from the dismantling operations.

Project Mitigation:

a) Verification of site clearance will be performed as part of the final debris recovery operation utilizing a high resolution side scan sonar survey. A description of the survey shall be submitted to the SLC for its review and approval prior to the conduct of such survey.

b) Suspect targets or debris will be plotted for positive verification and recovery.

c) The debris located will be recovered by divers to complete the site clearance verification. A test trawl will be conducted over each site as provided by Stipulation 5 as contained in Exhibit "C" and made a part hereof by this reference.

Monitoring:

Staff of the State Lands Commission will periodically monitor the site clearance operations and will check the side-scan sonar records and the trawl report to verify that all debris has been removed.

5. Impact: The oil and gas pipelines for Platforms Grace and Gail could be damaged during the removal operations of Platform Hope.

Project Mitigation:

a) To prevent damage to the oil and gas pipelines from Platform Grace, no heavy lifts will be made over the pipelines during the removal of Platform Hope.

b) Any lift where safe resetting of the package may be difficult, will be engineered with guidelines installed to control the package movement horizontally for approximately 2 feet of vertical movement.

c) The derrick and transport barges used to remove Platform Hope shall not be positioned on the east side the platform, i.e. the side on which working pipelines are to remain to service Platforms Grace and Gail in the federal OCS.

Monitoring:

Staff of the State Lands Commission will verify the barge location and periodically monitor the deck removal operations where difficult lifts may be anticipated to assure all appropriate safety measures are being employed.

6. Impact: Where underwater explosives are used there will be some mortality among the pelagic and demersal fish within about 100 meters of the detonation point. Additionally, untrained personnel and improperly treated and stored explosives can result in accidental explosions.

Project Mitigation:

a) Use of explosives will be conducted in accordance with all laws and regulations regarding such activity.

b) A licensed State of California blasting supervisor will direct the work, and will coordinate the clearance of the site prior to making a shot.

c) Explosives will be stored in a safe manner and in well-marked containers.

d) Platform removal operations will be timed to avoid critical cetacean migratory periods.

e) Independent observers located on the abandonment support vessels will monitor the area prior to, during and after detonation of charges; detonation of charges will be delayed until all marine mammals observed in the area (within 1,000 yards [914 m]) are certain to have vacated; detonation will only occur during daylight hours to facilitate visual monitoring; pre and post-detonation surveys by divers, including recovery of any injured or dead fish will be conducted immediately after detonation; and implementation of staggering of detonations which will reduce the maximum pressure generated by the explosions.

f) A killer whale sonic warning system which emits sounds nearly identical to those emitted by "killer whales" will be placed in the waters near the platforms prior to blasting.

Monitoring:

Staff of the State Lands Commission will periodically inspect the storage of explosives, detonation monitoring procedures, and the detonation phase of operations to assure all safety mitigation measures described above are being employed.

7. Impact: During the removal of the oil platforms there is always the possibility of a small operational spill from fuel transfers or accidental leaks.

Project Mitigation:

a) Procedures for major and minor spill events are outlined in Chevron's Oil Spill Contingency Plan for State Leases.

b) Should the spill exceed the capacity of the onsite equipment and personnel, additional resources are available through Chevron's local oil spill response organization and Clean Seas Oil Spill Cooperative.

Monitoring:

Staff of the State Lands Commission will be familiar with Chevron's Oil Spill Contingency Plan for State Leases. Staff will periodically monitor the removal phase of operations to assure all safety and environment mitigation measures described above are being employed.

8. Impact: There will be emissions created during the abandonment and removal of the four offshore oil and gas platforms.

Project Mitigation:

a) As determined by the Santa Barbara County APCD, emissions would be reduced by utilizing the following Santa Barbara County APCD standard measures which are included in the 1991 Air Quality Attainment Plan (AQAP) as control measures N-IC-7:

- Equipment shall be maintained as per manufacturer's specifications;
- Catalytic converters shall be installed on all gasoline-powered equipment (if applicable);
- The fuel injection timing shall be retarded on all gasoline-powered equipment by two (2) degrees from manufacturers recommendations;
- Gasoline-powered equipment shall be substituted for diesel-powered equipment if feasible;
- Direct injection diesel engines (i.e. Caterpillar D 399 of equivalent) shall be used if available;
- Turbocharged diesel engines with inter-cooling shall be used if available; and
- Reformulated diesel fuel and high pressure injectors shall be used in all diesel-powered removal and abandonment equipment.

Monitoring:

Staff will be familiar with the Santa Barbara County Air Pollution Control District (APCD) standard measures which are included in the 1991 Air Quality Attainment Plan (AQAP) as control measures N-IC-7 stated above. Staff will periodically monitor the removal phase of operations to assure the standard measures stated above are being employed and advise the APCD of any difficulties.

9. Impact: There are known kelp beds in the vicinity of the platforms which could be impacted during the deployment of anchors. When the anchors are removed, seafloor scarring may occur.

Project Mitigation:

There will be a pre and post-project surveys conducted within a 1, 000 foot radius of the platforms.

1) The pre-operations survey will note all sensitive bottom features, including pipelines, rocky outcrops, and kelp beds observed during the survey. These areas will be noted on applicable navigation charts and no anchors will be placed in these areas.

2) The post-operations project survey will note all anchor scars and record any additional debris to be removed. Anchors, of which no more than four (4) will be used in the barge mooring spread, shall be placed and retrieved vertically.

Monitoring:

Staff of the State Lands Commission will be present at anchor placement and retrieval. Commission staff will periodically monitor the pre and post- survey operations to ensure proper implementation. Survey reports will be reviewed for completeness and accuracy. Anchor deployment locations will be monitored to ensure compliance.